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Allan Zalkin, David H. Templeton,  
Carole Le Vanda and Andrew Streitwieser, Jr.

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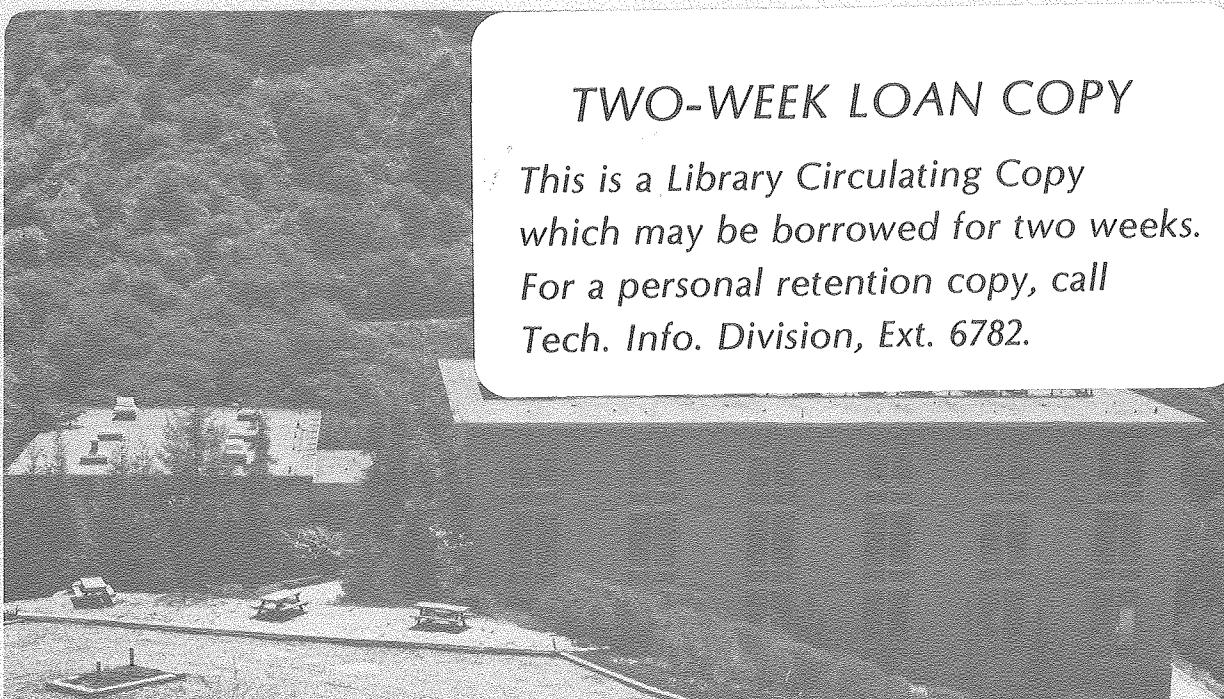
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SYNTHESIS AND STRUCTURE OF TWO CRYSTALLINE  
FORMS OF CYCLOOCTATETRAENETHORIUM(IV)  
DICHLORIDE BISTETRAHYDROFURAN

by Allan Zalkin,\* David H. Templeton, Carole Le Vanda<sup>†</sup>  
and Andrew Streitwieser Jr.

Materials and Molecular Research Division  
Lawrence Berkeley Laboratory and  
Department of Chemistry  
University of California  
Berkeley, California 94720

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$\text{Th}(\text{C}_8\text{H}_8)\text{Cl}_2(\text{OC}_4\text{H}_8)_2$  crystallizes in two modifications. The  $\alpha$ -form, space group  $P2_1/n$ , has dimensions:  $a = 8.589(4)$  Å,  $b = 27.222(10)$  Å,  $c = 7.950(4)$  Å,  $\beta = 96.92(5)^\circ$ ,  $Z = 4$  and  $d_X = 1.99$  g/cm<sup>3</sup>. The  $\beta$ -form, space group  $P2_1/c$ , has dimensions:  $a = 13.036(6)$  Å,  $b = 11.601(6)$  Å,  $c = 24.598(10)$  Å,  $\beta = 102.90(5)^\circ$ ,  $Z = 8$  and  $d_X = 2.02$  g/cm<sup>3</sup>. The  $\alpha$ -form has one molecule in the asymmetric unit whereas the  $\beta$ -form has two which are chemically equivalent but crystallographically different. The study thus yields three independent determinations of the same molecular structure. Thorium is bonded to the cyclooctatetraene ring, to two chlorine atoms, and to two oxygen atoms from the tetrahydrofuran moieties. Significant distances (averaged) are: Th-Cl = 2.69 Å, Th-O = 2.57 Å, and Th to plane of  $\text{C}_8\text{H}_8$  = 2.02 Å.

## INTRODUCTION

Since the first synthesis of uranocene, di- $\pi$ -cyclooctatetraene-uranium(IV),<sup>2</sup> a large number of related compounds have been prepared.<sup>3</sup> The bis-cyclooctatetraene compounds of all the lower actinides are now known, including thoracene, di- $\pi$ -cyclooctatetraeneethorium(IV).<sup>4</sup> X-ray crystal structures have been determined at Berkeley for several of these compounds.<sup>5</sup> All show the central metal atom in the center of two parallel planar eight-member rings.

We recently reported the preparation of mono-cyclooctatetraene-thorium(IV) dichloride and diborohydride.<sup>6</sup> In this paper we report the crystal structure of the dichloride which was isolated as the bis-tetrahydrofuran compound,  $C_8H_8ThCl_2 \cdot 2C_7H_8O$ , I, by the reaction of thoracene with thorium tetrachloride in THF. Compound I is more soluble in THF than is thorocene itself.

## EXPERIMENTAL

Cyclooctatetraenethorium dichloride bis-tetrahydrofuran. A suspension of 1.3 g (3.0 mmoles) of thoracene and 1.7 g (4.5 mmoles) of thorium tetrachloride in tetrahydrofuran (THF) was stirred at reflux under argon until the yellow color of thoracene disappeared (ca 1 wk). The mixture was degassed, taken into the glove box and the solid was separated by centrifugation. The THF-soluble portions were combined and the solvent was removed by vacuum transfer. Crystals were grown

from hot saturated THF solutions. Anal. Calcd. for  $C_{16}H_{24}ThClO_2$ : C, 34.86; H, 4.39; Cl, 12.86. Found: C, 34.65; H, 4.38; Cl, 12.22.

X-Ray Diffraction. White crystals of the compounds, because of their extreme sensitivity to the atmosphere, were sealed inside thin-walled quartz capillaries for the X-ray experiments. Weissenberg photography showed the material to be monoclinic, later designated as the  $\beta$ -form. Upon investigating a different crystal on a Picker FACS-I automated diffractometer, which was equipped with a graphite monochromator and a copper X-ray tube, we found it to be monoclinic with different cell dimensions than the first crystal. This new form was designated as the  $\alpha$ -form and a set of intensity data was collected from it. A third crystal from the same preparation was investigated and observed to be the  $\beta$ -form, and a set of intensity data was collected from it.

In both cases, setting angles of 12 reflections where  $95 < 2\theta < 106^\circ$  ( $\lambda CuK\alpha_1 = 1.54056 \text{ \AA}$ ) were used for least-squares adjustment of the cell dimensions. Cell dimensions and other crystal data are given in Table I.

A  $\theta$ - $2\theta$  scan technique with a scan speed of  $2^\circ/\text{min}$  was used to collect the intensities in the range of  $4^\circ < 2\theta < 120^\circ$ ; backgrounds were measured for 4 seconds at the beginning and end of each scan. Omega scans of several low-angle reflections showed widths at half-peak height of  $0.13^\circ$  to  $0.15^\circ$ . Three standard reflections were measured after each 200th scan to monitor for crystal decay, instrumental stability, and crystal alignment. A decay of 5% was observed in the intensities of the standards of both data sets, and the data

were adjusted accordingly. Correction for absorption was made by an analytical integration method.<sup>7</sup> During refinement, effects of extinction were evident in the data, and an empirical isotropic correction was applied, see Table I. Atomic scattering factors of Cromer and Waber<sup>8</sup> were used for Th, of Doyle and Turner<sup>9</sup> for Cl, O and C, and of Stewart, Davidson and Simpson<sup>10</sup> for hydrogen. Anomalous scattering corrections of Cromer and Liberman<sup>11</sup> were applied.

Determination of Structures. Three-dimensional Patterson maps indicated the positions of the Th atoms. Subsequent least-squares refinements and difference Fourier maps readily revealed all of the non-hydrogen atoms. All of the atoms, with the exception of the hydrogen atoms, were assigned anisotropic thermal parameters in the final refinements. For the  $\beta$  compound, because the thermal tensor for one of the  $C_8H_8$  carbon atoms was not positive-definite, the thermal parameters of the opposing carbons in the  $C_8H_8$  ring were constrained to be equal. Hydrogen atom parameters were estimated from the geometry at C-H distances of 0.95 Å and included in the least-squares calculations, but not refined. The full-matrix least-squares program minimizes the function  $\sum_w (\Delta F)^2 / \sum_w F_0^2$ . After the last cycle of refinement the largest shift of a parameter was 0.02 and 0.24 of its e.s.d. for the  $\alpha$  and the  $\beta$  compound, respectively. R factors and other statistical results of the least-squares refinements are given in Table I.

Positional parameters are given in Table II. Tables of the anisotropic thermal parameters, the calculated hydrogen positions,

and the lists of observed structure factors are in the supplementary material. Distances and angles are given in Tables III and IV, with atoms numbers as in Fig. 1.

## DISCUSSION

The Th atom is bonded to the cyclooctatetraene (COT) ring, to two chloride ions and to the oxygen atoms of the two THF molecules; see Fig. 1. The COT ring is centrally located on the Th atom with its plane at a distance of 2.02 Å. The chloride ions and THF molecules are alternatively disposed on the opposite side, with Th-Cl and Th-O distances of  $2.686 \pm 0.006$  Å and  $2.57 \pm 0.02$  Å, respectively. The Cl and the O atoms are very nearly equidistant from the COT plane; see Table V. The comparable Th-to-ring distance in thoracene<sup>5b</sup> is 2.00 Å, and the Th-Cl distances in these structures are just slightly under the 2.72 Å and 2.90 Å reported for  $\text{ThCl}_4$ .<sup>12</sup> The Cl-Cl vector is orthogonal to the O-O vector (see Fig. 2) and both are from 4° to 9° from an eclipsed orientation with the COT carbon atoms.

The 3 molecular structures determined in this study are chemically identical with essentially identical bond distances. About the only significant geometrical difference between the  $\alpha$  and  $\beta$  forms is the larger Cl-Th-Cl and smaller O-Th-O angles that the  $\alpha$  form exhibits, which is probably a packing effect. Nothing in the experiments reported here gives any information concerning what fosters the crystallization of one form rather than the other.

#### ACKNOWLEDGEMENT

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#### SUPPLEMENTARY MATERIAL AVAILABLE

A list of anisotropic thermal parameters, a list of estimated hydrogen positional parameters, and a listing of observed structure factors (35 pages). Ordering information is given on any current masthead page.

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Table I. Summary of Crystal Data Intensity Collection and Least-Squares Refinement Statistics

Compound	$\alpha\text{-C}_8\text{H}_8\text{ThCl}_2(\text{OC}_4\text{H}_8)_2$	$\beta\text{-C}_8\text{H}_8\text{ThCl}_2(\text{OC}_4\text{H}_8)_2$
Formula wt	551.31	551.31
a, Å	8.589(3)	13.036(4)
b, Å	27.22(2)	11.601(3)
c, Å	7.950(3)	24.598(8)
$\beta$ , deg	96.92(4)	102.90(4)
$V$ , Å <sup>3</sup>	1845	3626
Space group	P2 <sub>1</sub> /n	P2 <sub>1</sub> /c
Z	4	8
Density, calcd, g/cm <sup>3</sup>	1.985	2.020
Color	white	white
Crystal size, mm	parallelopiped 0.1 x 0.2 x 0.3	0.15 x 0.15 x 0.3
Crystal vol, mm <sup>3</sup>	0.007	0.007
$\mu$ , cm <sup>-1</sup>	288	293
T, °C	22	21
No. of scans (including standards)	5679	11573
Decay correction range	1.0-1.05	1.0-1.05
No. of unique data	2740	5390
No. data $F^2 > 3\sigma$ used in least-squares	2242	3914
Extinction factor k $F_{\text{corr}} = (1 + kI)F_{\text{obs}}$	$5 \times 10^{-7}$	$7 \times 10^{-7}$

Ignorance factor, p, in weighting expression $w = ((\sigma^2 F^2) + (pF^2))^{\frac{1}{2}}$	0.04	0.06
No. of variables in least-squares	190	331
$R_w = [\sum w(\Delta F)^2 / \sum w F_{obs}^2]^{1/2}$	0.045	0.054
$R = \sum  \Delta F  / \sum  F_{obs} $ $F^2 > 3\sigma$	0.036	0.045
R for all data	0.044	0.064
Goodness of fit	1.24	1.16

Table II. Positional Parameters<sup>a</sup>

$\alpha$ -form

ATOM	X	Y	Z
TH	.46399(4)	.13344(1)	.05714(3)
CL(1)	.5612(3)	.08843(9)	-.2128(3)
CL(2)	.2512(3)	.0769(1)	.1868(3)
O(1)	.223(1)	.1350(3)	-.169(1)
O(2)	.6250(3)	.0622(2)	.1857(7)
C(1)	.393(2)	.2010(4)	.292(1)
C(2)	.530(2)	.1810(4)	.360(1)
C(3)	.677(2)	.1714(4)	.305(2)
C(4)	.740(2)	.1799(4)	.156(2)
C(5)	.689(2)	.2004(4)	.000(2)
C(6)	.547(2)	.2202(4)	-.073(2)
C(7)	.400(2)	.2291(4)	-.017(2)
C(8)	.336(2)	.2207(4)	.133(2)
C(9)	.230(2)	.1477(6)	-.344(2)
C(10)	.072(2)	.1397(5)	-.429(2)
C(11)	-.032(3)	.1411(7)	-.293(3)
C(12)	.063(2)	.1387(7)	-.138(2)
C(13)	.603(2)	.0395(4)	.347(1)
C(14)	.758(2)	.0174(5)	.414(2)
C(15)	.838(2)	.0101(6)	.265(2)
C(16)	.768(2)	.0425(5)	.126(2)

Table II. Continued

$\beta$ -form

ATOM	X	Y	Z
TH(1)	.08705(4)	.17124(4)	.33807(2)
TH(2)	.41202(4)	.26318(4)	.62281(2)
CL(1)	-.0870(3)	.0453(3)	.3322(2)
CL(2)	.2072(3)	.0214(3)	.2963(1)
CL(3)	.2107(3)	.1956(3)	.5916(2)
CL(4)	.4755(3)	.2098(4)	.5290(1)
O(1)	.0054(8)	.1715(7)	.2337(4)
O(2)	.1444(8)	.0169(8)	.4139(4)
O(3)	.4190(9)	.0417(8)	.6268(4)
O(4)	.3192(8)	.4179(8)	.5532(4)
C(1)	-.017(1)	.372(1)	.3352(7)
C(2)	.055(2)	.393(1)	.3044(7)
C(3)	.160(2)	.372(1)	.3073(7)
C(4)	.243(1)	.332(1)	.3487(8)
C(5)	.251(1)	.290(1)	.4002(8)
C(6)	.185(2)	.274(1)	.4368(7)
C(7)	.075(2)	.290(1)	.4316(7)
C(8)	-.005(1)	.331(1)	.3897(8)
C(9)	.383(1)	.309(2)	.7264(6)
C(10)	.454(2)	.217(2)	.7333(7)
C(11)	.549(2)	.198(1)	.7187(7)
C(12)	.612(1)	.253(2)	.6858(7)
C(13)	.606(1)	.362(2)	.6600(6)
C(14)	.533(2)	.454(1)	.6541(6)
C(15)	.441(2)	.477(1)	.6715(7)
C(16)	.380(1)	.416(2)	.7002(7)
C(17)	.067(1)	.187(1)	.1905(6)
C(18)	-.016(2)	.191(2)	.1385(7)
C(19)	-.117(2)	.214(3)	.1500(8)
C(20)	-.107(1)	.196(1)	.2110(6)
C(21)	.252(1)	-.021(1)	.4339(6)
C(22)	.259(1)	-.069(2)	.4895(8)
C(23)	.152(2)	-.100(2)	.4922(7)
C(24)	.085(1)	-.013(1)	.4558(6)
C(25)	.364(2)	-.023(1)	.6620(8)
C(26)	.370(2)	-.144(2)	.6432(9)
C(27)	.467(2)	-.155(2)	.6226(7)
C(28)	.497(1)	-.032(1)	.6138(7)
C(29)	.369(2)	.485(2)	.5167(7)
C(30)	.286(2)	.569(2)	.487(1)
C(31)	.213(2)	.575(2)	.520(1)
C(32)	.221(1)	.471(1)	.5549(7)

<sup>a</sup>Estimated standard deviation of the least significant digit is given in parentheses here and in the following tables.

Table III. Interatomic Distances

	$\alpha$		$\beta$ (molecule 1)		$\beta$ (molecule 2)	
	Atoms	D( $\text{\AA}$ )	Atoms	D( $\text{\AA}$ )	Atoms	D( $\text{\AA}$ )
Th	-C1(1)	2.690(2)	Th(1)-C1(1)	2.676(4)	Th(2)-C1(3)	2.681(4)
	-C1(2)	2.688(3)	-C1(2)	2.692(3)	-C1(4)	2.691(3)
	-O(1)	2.58(1)	-O(1)	2.55(1)	-O(3)	2.57(1)
	-O(2)	2.53(1)	-O(2)	2.57(1)	-O(4)	2.59(1)
	-C(1)	2.74(1)	-C(1)	2.69(2)	-C(9)	2.71(1)
	-C(2)	2.73(1)	-C(2)	2.71(2)	-C(10)	2.70(2)
	-C(3)	2.73(1)	-C(3)	2.69(2)	-C(11)	2.73(2)
	-C(4)	2.72(1)	-C(4)	2.73(2)	-C(12)	2.72(2)
	-C(5)	2.73(1)	-C(5)	2.71(2)	-C(13)	2.74(2)
	-C(6)	2.71(1)	-C(6)	2.75(2)	-C(14)	2.73(2)
	-C(7)	2.71(1)	-C(7)	2.72(2)	-C(15)	2.75(2)
	-C(8)	2.72(1)	-C(8)	2.68(2)	-C(16)	2.70(2)
C(8)	-C(1)	1.40(2)	C(8) -C(1)	1.40(2)	C(16)-C(9)	1.40(3)
C(1)	-C(2)	1.35(2)	C(1) -C(2)	1.35(2)	C(9) -C(10)	1.40(3)
C(2)	-C(3)	1.41(2)	C(2) -C(3)	1.37(3)	C(10)-C(11)	1.38(2)
C(3)	-C(4)	1.39(2)	C(3) -C(4)	1.39(3)	C(11)-C(12)	1.43(2)

Table III. (Continued)

C(4) -C(5)	1.38(2)	C(4) -C(5)	1.34(2)	C(12)-C(13)	1.40(2)
C(5) -C(6)	1.39(2)	C(5) -C(6)	1.38(3)	C(13)-C(14)	1.41(2)
C(6) -C(7)	1.41(2)	C(6) -C(7)	1.43(3)	C(14)-C(15)	1.39(2)
C(7) -C(8)	1.39(2)	C(7) -C(8)	1.38(3)	C(15)-C(16)	1.37(2)
C-C(ave)	1.39 ± .02	C-C(ave)	1.38 ± .03	C-C(ave)	1.40 ± .02
O(1) -C(9)	1.44(1)	O(1) -C(17)	1.48(2)	O(3) -C(25)	1.45(2)
-C(12)	1.43(2)	-C(20)	1.47(2)	-C(28)	1.42(2)
O(2) -C(13)	1.46(1)	O(2) -C(21)	1.44(2)	O(4) -C(29)	1.45(2)
-C(16)	1.47(1)	-C(22)	1.46(2)	-C(32)	1.43(2)
C(9) -C(10)	1.46(2)	C(17)-C(18)	1.48(2)	C(25)-C(26)	1.48(3)
C(10)-C(11)	1.48(2)	C(18)-C(19)	1.43(3)	C(26)-C(27)	1.47(3)
C(11)-C(12)	1.40(3)	C(19)-C(20)	1.49(2)	C(27)-C(28)	1.51(3)
C(13)-C(14)	1.50(2)	C(21)-C(22)	1.46(2)	C(29)-C(30)	1.52(3)
C(14)-C(15)	1.45(2)	C(22)-C(23)	1.46(3)	C(30)-C(31)	1.39(3)
C(15)-C(16)	1.49(2)	C(23)-C(24)	1.49(2)	C(31)-C(32)	1.47(2)

Ave of 6 Th-Cl values = 2.686 ± .006 Å

Ave of 6 Th-O values = 2.57 ± .02 Å

Ave of 24 Th-C values = 2.72 ± .02 Å

Ave of 24 C-C values = 1.39 ± .02 Å

Table III. (Continued)

$\alpha$		$\beta$ (molecule 1)		$\beta$ (molecule 2)	
C1(1)-C1(1)	4.396	C1(1)-C1(2)	4.132	C1(3)-C1(4)	4.084
O(1) -O(2)	4.635	O(1) -O(2)	4.749	O(3) -O(4)	4.793
C1(1)-O(1)	3.232	C1(1)-O(1)	3.280	C1(3)-O(3)	3.203
C1(1)-O(2)	3.230	C1(1)-O(2)	3.248	C1(3)-O(4)	3.184
C1(2)-O(1)	3.222	C1(2)-O(1)	3.241	C1(4)-O(3)	3.305
C1(2)-O(2)	3.237	C1(2)-O(2)	3.177	C1(4)-O(4)	3.297

Table IV. Selected Angles

$\alpha$		$\beta$ (molecule 1)		$\beta$ (molecule 2)	
Atoms	Angle	Atoms	Angle	Atoms	Angle
C1(1)-Th -C1(2)	109.6(1)	C1(1)-Th(1)-C1(2)	100.7(1)	C1(3)-Th(2)-C1(4)	99.0(3)
O(1) -Th -O(2)	130.6(2)	O(1) -Th(1)-O(2)	136.0(3)	O(3) -Th(2)-O(4)	136.5(3)
C1(1)-Th -O(1)	75.7(2)	C1(1)-Th(1)-O(1)	77.7(2)	C1(3)-Th(2)-O(3)	75.1(3)
C1(1)-Th -O(2)	76.4(1)	C1(1)-Th(1)-O(2)	76.4(2)	C1(3)-Th(2)-O(4)	74.4(2)
C1(2)-Th -O(1)	75.5(2)	C1(2)-Th(1)-O(1)	76.4(2)	C1(4)-Th(2)-O(3)	77.8(2)
C1(2)-Th -O(2)	76.7(2)	C1(2)-Th(1)-O(2)	74.2(2)	C1(4)-Th(2)-O(4)	77.3(2)
C1(1)-Th -C(5)	83.1(3)	C1(1)-Th(1)-C(8)	86.6(4)	C1(3)-Th(2)-C(9)	89.5(4)
C1(2)-Th -C(1)	84.6(2)	C1(2)-Th(1)-C(4)	89.8(3)	C1(4)-Th(2)-C(13)	86.9(3)
O(1) -Th -C(7)	73.0(4)	O(1) -Th(1)-C(2)	71.9(3)	O(3) -Th(2)-C(11)	71.2(4)
O(2) -Th -C(3)	73.2(3)	O(2) -Th(1)-C(6)	70.2(4)	O(4) -Th(2)-C(15)	70.1(4)
C(8) -C(1)-C(2)	135(1)	C(8) -C(1) -C(2)	131(2)	C(16)-C(9) -C(10)	133(2)
C(1) -C(2)-C(3)	136(1)	C(1) -C(2) -C(3)	138(2)	C(9) -C(10)-C(11)	135(2)
C(2) -C(3)-C(4)	134(1)	C(2) -C(3) -C(4)	135(2)	C(10)-C(11)-C(12)	137(2)
C(3) -C(4)-C(5)	136(1)	C(3) -C(4) -C(5)	134(2)	C(11)-C(12)-C(13)	133(2)
C(4) -C(5)-C(6)	135(1)	C(4) -C(5) -C(6)	137(2)	C(12)-C(13)-C(14)	134(2)

Table IV. Continued

C(5) -C(6)-C(7) 135(1)  
C(6) -C(7)-C(8) 135(1)  
C(7) -C(8)-C(1) 135(1)

C(5) -C(6) -C(7) 133(2)  
C(6) -C(7) -C(8) 134(2)  
C(7) -C(8) -C(1) 138(2)

C(13)-C(14)-C(15) 136(2)  
C(14)-C(15)-C(16) 134(2)  
C(15)-C(16)-C(9) 138(2)

Table V. Least-square Plane and Distances ( $\text{\AA}$ ) of Atoms from the Planes.

Plane: C(1) - C(8) in  $\alpha$  compound

$$2.367 x + 24.583 y + 2.336 z = 6.542$$

C(1)	.014	C(5)	.015	Th	-2.03
C(2)	.004	C(6)	-.005	C1(1)	-3.54
C(3)	-.013	C(7)	-.001	C1(2)	-3.62
C(4)	-.003	C(8)	-.010	O(1)	-3.09
				O(2)	-3.10

Plane: C(1) - C(8) in  $\beta$  compound molecule 1

$$1.334 x + 10.740 y + 8.166 z = 6.739$$

C(1)	-.028	C(5)	-.019	Th(1)	-2.02
C(2)	.045	C(6)	.023	C1(1)	-3.66
C(3)	-.019	C(7)	.000	C1(2)	-3.81
C(4)	.003	C(8)	-.004	O(1)	-2.98
				O(2)	-2.98

Table V. (Continued)

Plane: C(9) - C(16) in  $\beta$  compound molecule 2

$$4.408 x + 4.739 y + 18.471 z = 16.586$$

C(9)	-.018	C(13)	-.011	Th(2)	-2.02
C(10)	-.012	C(14)	-.004	C1(3)	-3.80
C(11)	.044	C(15)	.025	C1(4)	-3.72
C(12)	-.021	C(16)	-.003	O(3)	-2.96
				O(4)	-2.98

FIGURE CAPTIONS

Fig. 1. ORTEP drawing of the  $C_8H_8ThCl_2(OC_4H_8)_2$  molecules: (a)  $\alpha$ -form,  
(b)  $\beta$ -form molecule 1 and (c)  $\beta$ -form molecule 2.

Fig. 2. ORTEP drawing perpendicular to the COT ring showing the  
orientation of the Cl atoms and THF molecules to the COT ring.

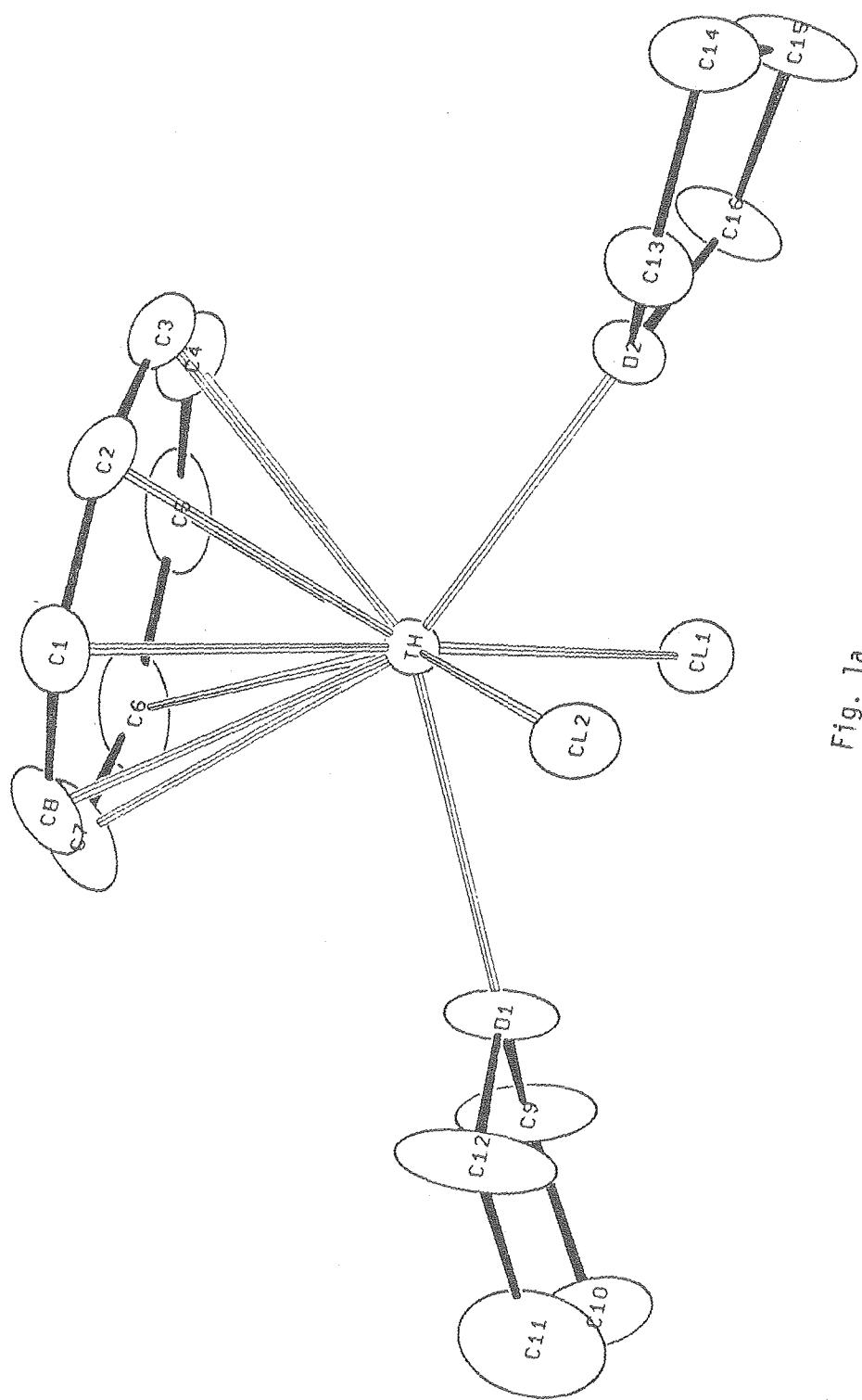


Fig. 1a

X8L 793-8720

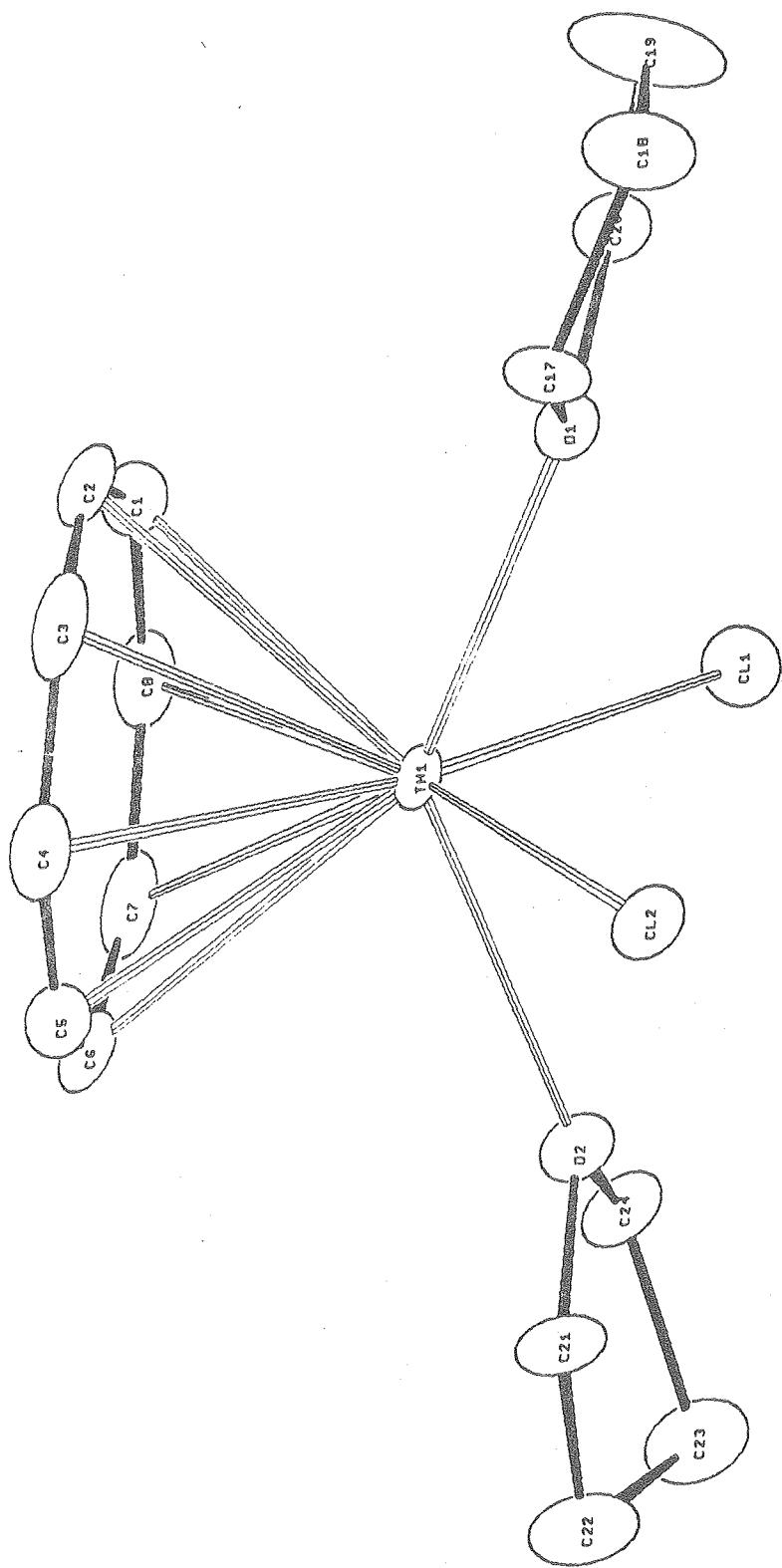
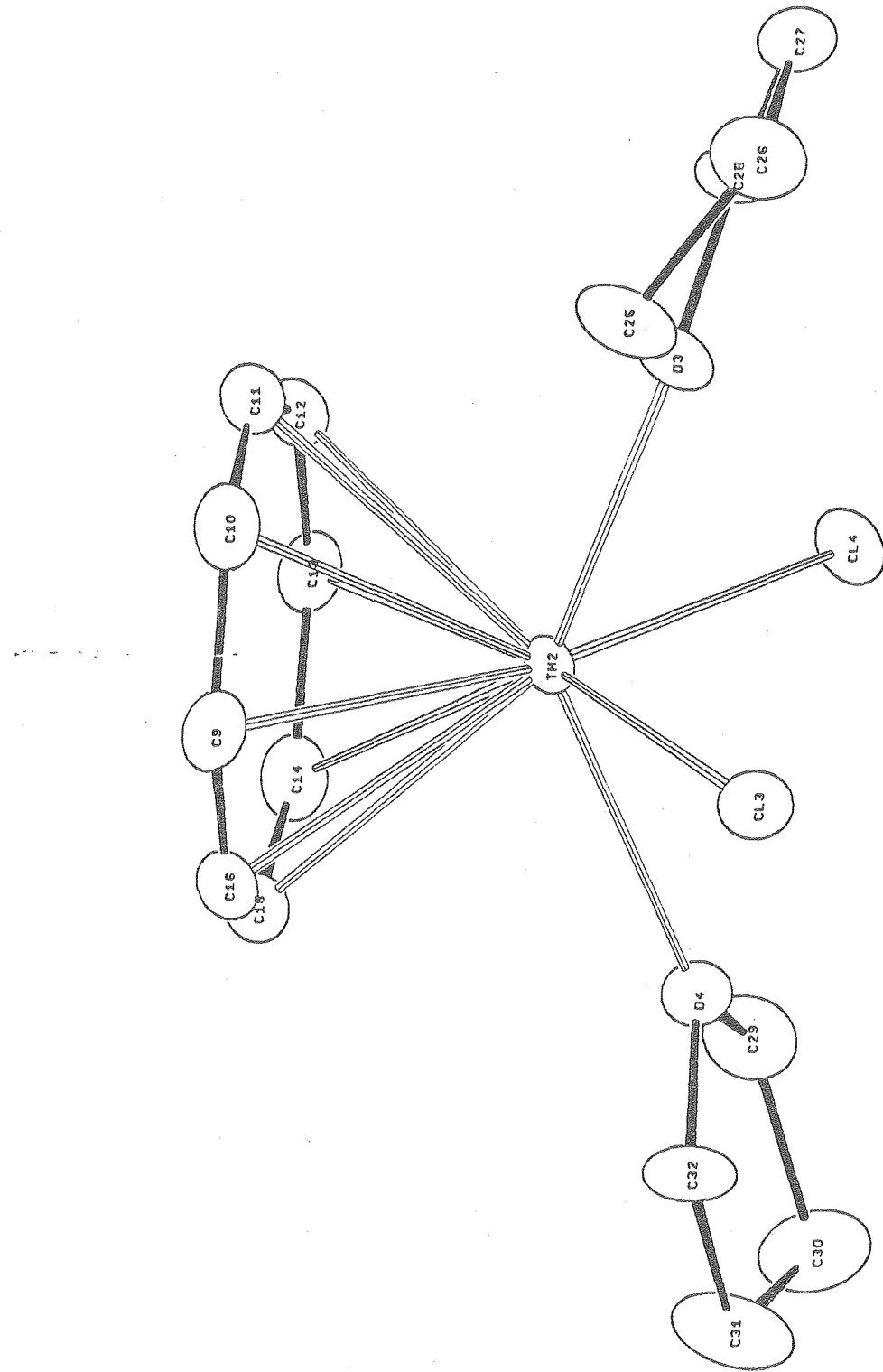


Fig. 1b

XBL 793-8721



XBL 793-8722

Fig. 1c

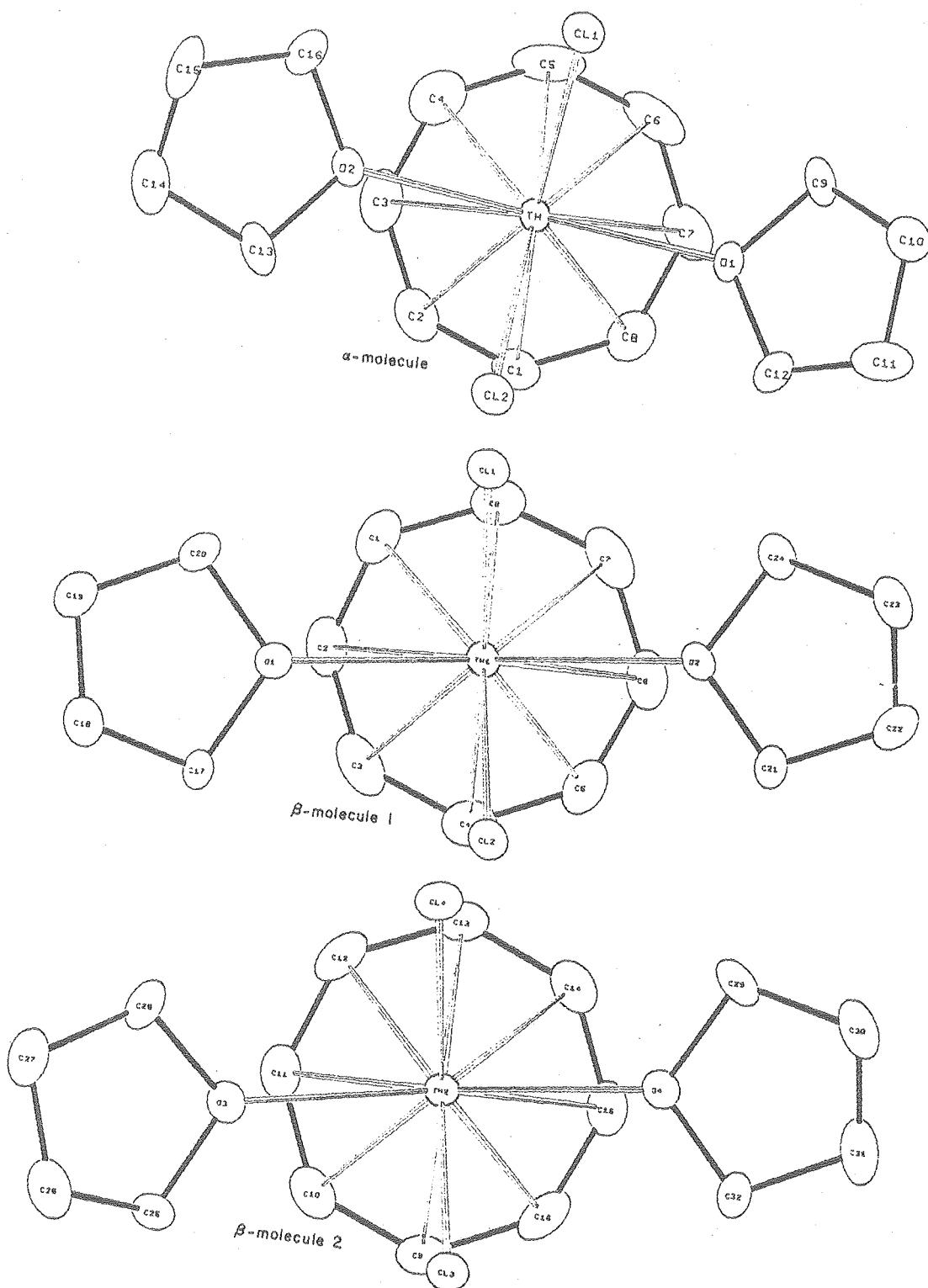


Fig. 2

XBL 733-9430

Supplementary Material for

SYNTHESIS AND STRUCTURE OF TWO CRYSTALLINE FORMS OF  
CYCLOOCTATETRAENETHORIUM(IV) DICHLORIDE BISTETRAHYDROFURAN

by Allan Zalkin, David H. Templeton, Carole Le Vanda and  
Andrew Streitwieser, Jr.

Anisotropic Thermal Parameters<sup>a</sup>

$\alpha$ -form

ATOM	B11	B22	B33	B12	B13	B23
TH	2.99(3)	2.53(2)	2.53(2)	.12(1)	.28(2)	.254(8)
CL(1)	5.2(1)	5.8(1)	3.18(9)	.7(1)	.45(9)	-.94(8)
CL(2)	4.4(1)	5.9(1)	5.2(1)	-1.0(1)	.8(1)	1.8(1)
O(1)	3.0(4)	9.9(5)	4.3(3)	1.1(3)	-.2(3)	2.8(3)
O(2)	4.5(4)	4.0(3)	3.0(2)	.8(2)	.3(2)	.8(2)
C(1)	6.8(8)	4.9(5)	4.0(5)	.6(5)	1.7(5)	-1.1(4)
C(2)	7.3(8)	4.5(5)	3.9(5)	-1.9(5)	-.6(5)	-.6(4)
C(3)	7.2(8)	4.1(5)	6.5(7)	-1.0(6)	-2.5(6)	-.8(5)
C(4)	5.4(8)	5.0(6)	9.2(9)	-2.3(5)	-.1(7)	-2.2(6)
C(5)	8.4(10)	4.0(5)	10.3(10)	-2.3(6)	6.2(9)	-1.7(6)
C(6)	14.3(16)	3.2(5)	5.9(7)	-1.7(6)	4.6(9)	1.0(4)
C(7)	13.2(13)	3.8(5)	6.4(7)	2.8(6)	2.9(8)	1.9(5)
C(8)	7.4(8)	4.2(5)	7.7(8)	2.9(5)	1.2(6)	-.6(5)
C(9)	4.9(9)	15.6(12)	3.9(5)	.4(8)	-1.1(5)	4.2(6)
C(10)	4.5(8)	11.4(9)	4.7(6)	-1.2(6)	-.1(6)	1.7(5)
C(11)	7.9(14)	17.5(16)	9.2(12)	2.4(10)	4.9(12)	3.2(10)
C(12)	4.0(9)	20.4(18)	7.5(9)	4.3(9)	1.5(8)	5.6(10)
C(13)	8.1(8)	5.4(5)	4.1(5)	.9(5)	-.0(5)	2.1(4)
C(14)	8.6(11)	3.4(9)	6.5(7)	1.2(8)	-2.0(7)	2.3(7)
C(15)	6.3(9)	10.1(9)	11.1(10)	3.7(8)	-1.2(8)	4.5(8)
C(16)	5.8(8)	8.8(7)	7.2(7)	4.7(7)	1.3(6)	1.4(6)

Anisotropic Thermal Parameters (Continued)

$\beta$ -form

ATOM	B11	B22	B33	B12	B13	B23
TH(1)	3.35(3)	1.46(2)	2.60(2)	-.06(2)	.98(2)	.01(1)
TH(2)	3.05(3)	2.60(2)	2.37(2)	-.09(2)	1.05(2)	-.31(2)
CL(1)	3.8(2)	4.6(2)	4.7(2)	-1.0(2)	1.3(2)	.9(2)
CL(2)	4.6(2)	3.0(1)	3.6(2)	.9(1)	1.6(1)	.2(1)
CL(3)	3.6(2)	4.0(2)	4.9(2)	-.2(1)	1.3(2)	.5(1)
CL(4)	5.7(2)	5.0(2)	3.7(2)	.5(2)	2.7(2)	-.5(1)
O(1)	3.1(5)	2.6(4)	3.8(5)	-.1(4)	.9(4)	.5(3)
O(2)	4.1(5)	3.1(4)	3.1(4)	.3(4)	1.5(4)	.9(4)
O(3)	5.9(7)	2.7(4)	5.2(5)	.2(4)	2.7(5)	-.1(4)
O(4)	4.3(6)	3.8(5)	3.7(5)	.2(4)	1.4(4)	.9(4)
C(1)	5.3(8)	2.9(5)	5.7(7)	.3(5)	-.7(6)	-.2(5)
C(2)	8.2(9)	1.6(4)	4.5(6)	.0(5)	.6(6)	.2(4)
C(3)	10.8(12)	2.2(5)	4.7(7)	-1.7(6)	3.0(8)	-.5(5)
C(4)	5.4(7)	2.7(5)	6.7(8)	-.2(5)	1.9(6)	-1.4(5)
C(5)	5.3447	2.9406	5.7256	.2684	-.7065	-.2329
C(6)	8.2166	1.5587	4.4893	.0065	.5826	.1711
C(7)	10.7636	2.1929	4.680	-1.711	3.0429	-.5192
C(8)	5.3857	2.7487	6.6688	-.2008	1.9311	-1.4008
C(9)	4.1(7)	6.6(7)	3.0(5)	-.1(6)	1.0(4)	.0(5)
C(10)	6.8(9)	4.4(6)	3.7(6)	-1.3(6)	.8(6)	.2(5)
C(11)	6.0(8)	3.3(5)	4.5(6)	-.1(5)	-.1(5)	-.4(5)
C(12)	4.4(7)	6.3(7)	4.4(6)	1.7(6)	.3(5)	-2.0(6)
C(13)	4.0633	6.6399	3.0483	-.0681	.9998	.043
C(14)	6.8441	4.4294	3.7487	-1.3428	.7753	.2256
C(15)	5.9746	3.2714	4.4623	-.075	-.0571	-.4318
C(16)	4.356	6.2746	4.4106	1.7455	.2562	-1.9679
C(17)	3.3(8)	5.3(8)	2.5(6)	.6(6)	.1(5)	.7(6)
C(18)	6.0(12)	8.6(12)	3.8(8)	1.1(10)	1.1(8)	1.3(8)
C(19)	4.6(11)	17.9(25)	4.2(9)	2.6(14)	.3(8)	2.1(12)
C(20)	3.2(8)	3.7(7)	4.8(8)	1.0(6)	.5(6)	.1(6)
C(21)	4.6(9)	4.6(8)	3.3(7)	1.8(7)	.9(6)	1.3(6)
C(22)	4.6(11)	7.0(11)	6.5(10)	2.8(9)	1.0(8)	1.7(9)
C(23)	7.6(13)	6.1(10)	4.6(9)	.8(9)	2.4(9)	2.4(8)
C(24)	5.5(10)	3.2(7)	4.7(8)	.1(7)	1.7(7)	2.0(6)
C(25)	6.8(12)	3.5(7)	8.1(11)	.3(8)	5.2(10)	.7(8)
C(26)	9.8(16)	4.4(9)	7.4(12)	.4(10)	2.8(11)	1.3(9)
C(27)	8.1(14)	5.4(10)	4.3(9)	2.8(9)	1.0(9)	1.0(7)
C(28)	4.4(10)	3.9(8)	6.6(10)	1.4(7)	.7(8)	-.3(7)
C(29)	8.3(13)	4.4(8)	6.1(10)	-.4(9)	3.9(9)	1.9(8)
C(30)	8.5(15)	5.6(11)	9.4(14)	.3(11)	2.3(12)	4.0(11)
C(31)	14.9(23)	4.3(10)	10.6(16)	3.2(12)	6.0(16)	2.8(11)
C(32)	5.1(10)	3.5(7)	7.1(10)	1.3(7)	2.0(8)	1.6(7)

Estimated Positional Parameters for Hydrogen

$\alpha$ -form

H(1)	.3177	.2024	.3703
H(2)	.5256	.1707	.4740
H(3)	.7483	.1556	.3887
H(4)	.846	.169	.1615
H(5)	.7677	.2012	-.0734
H(6)	.5493	.2298	-.1873
H(7)	.328	.2445	-.1005
H(8)	.2294	.2302	.1268
H(9)	.3035	.1275	-.3909
H(10)	.2596	.1813	-.3529
H(11)	.0646	.1085	-.4834
H(12)	.0436	.1647	-.5103
H(13)	-.1029	.1146	-.3044
H(14)	-.0885	.1714	-.2988
H(15)	.0477	.1666	-.0722
H(16)	.0348	.1098	-.0789
H(17)	.5242	.0148	.3303
H(18)	.5723	.0635	.4233
H(19)	.743	-.0131	.4681
H(20)	.8151	.039	.4919
H(21)	.8284	-.0231	.2293
H(22)	.9464	.018	.2915
H(23)	.8376	.0685	.1062
H(24)	.7425	.0244	.0241

Assigned Isotropic Thermal Parameters

	Atoms	$B(\text{\AA})^2$
$\alpha$ -form	H(1) -H(8)	8.0
	H(9) -H(24)	10.0
$\beta$ -form	H(1) -H(16)	7.0
	H(17)-H(48)	9.0

Estimated Positional Parameters for Hydrogen

$\beta$ -form

H(1)	-0.0875	.3857	.315
H(2)	.0257	.436	.2719
H(3)	.1803	.3894	.2735
H(4)	.3074	.3350	.3372
H(5)	.3203	.2646	.4152
H(6)	.2218	.248	.4723
H(7)	.0536	.2674	.4641
H(8)	-0.0700	.3327	.401
H(9)	.3248	.2950	.743
H(10)	.4323	.1533	.7524
H(11)	.5806	.1285	.7345
H(12)	.6685	.2082	.6804
H(13)	.664	.3756	.6432
H(14)	.5533	.5150	.6328
H(15)	.4141	.5519	.6601
H(16)	.3203	.4604	.703
H(17)	.1131	.1243	.190
H(18)	.1053	.257	.1957
H(19)	-0.0184	.1184	.1198
H(20)	0	.2497	.1148
H(21)	-0.1682	.1622	.1294
H(22)	-0.1376	.2908	.1401
H(23)	-0.1277	.263	.2277
H(24)	-0.1487	.1324	.2175
H(25)	.2981	.0432	.436
H(26)	.269	-.0773	.4098
H(27)	.287	-.014	.5175
H(28)	.3028	-.1358	.4946
H(29)	.1423	-.095	.5294
H(30)	.1348	-.1760	.4785
H(31)	.0187	-.0455	.4386
H(32)	.0747	.0526	.4768
H(33)	.2928	.0016	.6562
H(34)	.3977	-.015	.6999
H(35)	.3104	-.1603	.6139
H(36)	.3713	-.1945	.6734
H(37)	.4539	-.1972	.5885
H(38)	.5199	-.1931	.6493
H(39)	.5634	-.015	.6378
H(40)	.5014	-.0208	.5762
H(41)	.3919	.4359	.4906
H(42)	.4286	.5251	.5379
H(43)	.2542	.5407	.451
H(44)	.3167	.6421	.4839
H(45)	.1449	.5813	.4973
H(46)	.228	.641	.5437
H(47)	.2189	.4904	.5919
H(48)	.1644	.420	.5399

OBSERVED STRUCTURE FACTORS, STANDARD DEVIATIONS, AND DIFFERENCES (ALL X 3.0)  
 ALPHA C8H8.THCL2.2(OC4H5) F(0,0,0) ≈ 3076

FOB AND FCA ARE THE OBSERVED AND CALCULATED STRUCTURE FACTORS.

SG = ESTIMATED STANDARD DEVIATION OF FOB. DEL = |FOB| - |FCA|.

\* INDICATES ZERO WEIGHTED DATA.

K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL				
H,L=	0, 0	4	419	9	1	26	61	5	1	20	289	12	4	2	14	20	6*		
2	92	2	-0	5	391	8	-17	27	128	4	2	21	39	14	5*	3	87	3	5
4	962	20	-133	6	297	6	-10	28	238	7	-2	22	104	5	-1	4	314	15	-4
6	262	5	-15	7	219	5	-7	H,L=	0,	4	23	30	19	-6*	5	54	4	4	
8	554	11	-25	8	657	15	-13	0	48	4	5	24	243	6	-1	6	55	5	-3
10	357	7	-13	9	409	9	-18	1	515	37	13	25	72	3	10	7	61	6	3
12	475	10	-29	10	335	7	2	2	23	10	12*	H,L=	0,	6	8	225	5	-6	
14	598	12	-3	11	47	3	1	3	409	13	19	0	171	5	-3	9	35	6	4
16	358	8	-8	12	572	12	-8	4	96	3	9	1	279	16	12	10	135	4	-5
18	504	10	-14	13	496	12	-17	5	685	18	17	2	40	10	-1*	11	23	10	-2*
20	315	7	-10	14	263	6	-7	6	74	3	-3	3	249	12	6	12	176	4	-7
22	471	10	2	15	13	23	9*	7	278	6	0	4	228	6	4	13	49	4	-2
24	146	4	7	16	287	6	-5	8	99	4	5	5	370	20	16	H,L=	1,	-8	
26	344	10	4	17	383	8	-4	9	588	14	-13	6	103	4	-1	1	212	5	-3
28	39	9	11*	18	252	5	1	10	80	4	-3	7	124	4	-1	2	47	5	15
30	275	9	13	19	49	7	7	11	197	4	-6	8	281	6	7	3	241	6	-3
H,L=	0,	1	20	164	4	4	12	26	10	15*	9	385	8	15	4	21	24	10*	
1	656	13	-19	21	257	6	-1	13	452	9	-12	10	83	5	-0	5	144	5	-2
2	321	7	-11	22	273	6	0	14	47	6	11	11	42	13	7*	6	31	12	6*
3	804	22	-3	23	109	4	5	15	29	9	16*	12	173	4	0	7	263	6	7
4	31	4	10	24	51	4	3	16	34	9	13*	13	365	8	15	8	32	8	-1*
5	412	9	-27	25	164	4	2	17	429	9	-7	14	135	4	4	9	74	3	5
6	209	4	-12	26	240	6	7	18	63	7	0	15	50	6	15	10	17	24	2*
7	407	9	-13	27	141	4	3	19	172	4	0	16	80	6	1	11	275	6	-8
8	190	4	-2	28	34	10	8*	20	30	10	6*	17	318	12	12	12	0	20	-8*
9	322	7	2	29	114	6	-7	21	374	13	9	18	150	5	7	13	14	23	-5*
10	68	3	-7	H,L=	0,	3	22	34	12	-3*	19	36	7	9*	H,L=	1,	-7		
11	730	17	-21	1	63	3	8	23	149	4	-3	20	44	7	5	0	469	17	21
12	124	3	-6	2	728	35	33	24	47	6	1	21	218	5	6	1	140	4	5
13	37	3	4	3	360	7	2	25	288	6	2	22	151	4	0	2	22	19	4*
14	224	5	1	4	43	4	-2	26	36	7	2*	H,L=	0,	7	3	115	4	5	
15	594	12	-21	5	111	3	-3	27	143	5	-4	1	258	11	-2	4	399	9	13
16	133	3	-7	6	593	12	-22	H,L=	0,	5	2	262	6	10	5	127	4	11	
17	73	3	9	7	455	9	-2	1	71	5	11	3	245	6	-2	6	65	4	15
18	206	5	1	8	247	5	-9	2	512	34	21	4	13	23	5*	7	75	4	4
19	494	10	4	9	147	3	-5	3	131	4	-1	5	223	12	3	8	283	6	8
20	94	4	0	10	466	10	-11	4	179	9	15	6	195	4	10	9	134	4	5
21	134	3	7	11	334	7	1	5	108	4	7	7	219	5	-3	10	141	4	2
22	82	4	6	12	244	5	-7	6	650	13	44	8	71	4	4	11	45	10	-0*
23	369	8	6	13	164	4	1	7	230	5	7	9	86	4	3	12	191	5	3
24	95	4	-3	14	325	7	-11	8	274	6	8	10	135	5	-1	13	138	4	-6
25	177	4	1	15	197	4	1	9	32	13	9*	11	201	5	-13	14	221	5	-1
26	13	25	5*	16	319	7	-5	10	479	14	5	12	117	4	6	15	33	8	8*
27	238	6	8	17	11	25	5*	11	176	5	-4	13	21	17	10*	16	154	5	1
28	104	4	1	18	212	5	-4	12	267	6	-0	14	152	4	5	17	101	4	-3
29	172	7	3	19	169	4	0	13	77	5	-2	15	215	5	-4	18	238	6	-7
30	41	6	4	20	377	5	-3	14	338	7	2	16	122	4	-4	19	22	10	13*
H,L=	0,	2	21	83	4	8	15	70	5	4	17	67	4	2	H,L=	1,	-6		
0	259	10	-26	22	127	4	8	16	327	12	-1	18	113	3	0	1	264	14	7
1	403	21	7	23	144	4	4	17	25	27	13*	H,L=	0,	8	2	318	12	10	
2	284	6	-4	24	317	7	4	18	214	5	3	0	342	16	-18	3	299	11	13
3	424	9	-9	25	70	4	4	19	26	15	4*	1	80	4	-1	4	61	6	6

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K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL
5	249	6	15	11	163	4	1	9	156	3	-2	3	756	16	-16	27	50	6	-6
6	327	7	23	12	218	5	-1	10	520	13	-11	4	92	2	1	25	41	7	-2
7	291	6	9	13	94	6	-8	11	554	11	-16	5	334	7	-9	29	26	10	-4*
8	175	4	9	14	334	7	-2	12	361	7	1	6	416	8	-18	30	234	14	-13
9	108	4	-1	15	82	4	-3	13	143	3	-8	7	315	6	-5	H,L=	1,	2	
10	278	16	13	16	327	7	-5	14	362	7	-4	8	102	2	-0	1	533	45	46
11	242	6	4	17	56	5	1	15	372	8	1	9	265	5	-6	2	327	20	13
12	184	14	-2	18	225	6	1	16	255	5	-2	10	210	4	6	3	559	11	-4
13	1223	-5*	19	31	29	18*	17	63	3	3	11	597	14	-32	4	40	9	1*	
14	230	5	5	20	391	17	-6	18	266	6	-1	12	277	9	-9	5	244	5	1
15	236	18	-0	21	34	7	7*	19	250	5	0	13	29	4	5	6	373	8	-10
16	175	12	-2	22	159	4	2	20	288	6	2	14	98	11	6	7	648	15	-16
17	88	4	-0	23	0	23	-4*	21	100	4	-1	15	527	13	-34	8	141	12	4
18	187	14	5	24	297	8	1	22	36	4	-1	16	194	4	-5	9	288	8	-2
19	228	19	-4	25	59	5	-8	23	163	5	6	17	79	3	-2	10	307	6	-17
20	140	4	-8	26	93	3	2	24	313	12	1	18	102	3	0	11	623	15	-21
21	78	4	1	27	26	26	18*	25	119	4	-2	19	504	14	-10	12	232	5	-11
22	85	4	4	H,L=	1,	-3	26	34	7	4*	20	112	3	-2	13	49	3	4	
	H,L=	1,	-5	0	381	10	7	27	148	4	4	21	165	4	6	14	279	6	1
0	213	5	4	1	526	11	2	28	254	6	-4	22	77	4	4	15	491	13	-12
1	348	15	9	2	65	5	5	29	106	5	0	23	401	15	-6	16	286	6	-9
2	102	4	1	3	500	13	-3	H,L=	1,	-1	24	52	6	4	17	41	7	4	
3	347	7	25	4	206	4	-1	01108	24	1	25	197	5	3	18	144	4	0	
4	262	6	20	5	638	16	-12	1	557	12	15	26	25	10	21*	19	421	9	-10
5	492	10	24	6	140	3	2	2	114	2	-3	27	257	7	1	20	158	4	-5
6	206	5	6	7	289	6	-1	3	283	6	-3	28	45	6	3	21	61	8	-0
7	227	5	5	8	173	4	2	4	684	14	1	29	174	7	-1	22	65	4	3
8	239	15	1	9	589	12	-15	5	507	11	-6	30	0	26	-6*	23	309	7	-4
9	470	22	-3	10	87	3	3	6	471	10	-5	H,L=	1,	1	24	116	4	-1	
10	158	5	-0	11	109	3	3	7	74	2	4	0	847	67	-43	25	144	4	4
11	73	7	11	12	177	4	0	8	777	16	-7	1	248	5	-3	26	0	23	-19*
12	238	5	-1	13	471	13	-6	9	585	12	-16	2	235	5	1	27	182	5	-5
13	429	17	5	14	57	4	8	10	466	9	-12	3	34	4	27	28	133	8	-3
14	104	5	-4	15	15	19	-12*	11	29	3	3	4	823	32	-16	29	155	9	-3
15	21	33	19*	16	89	3	-3	12	556	13	-8	5	305	6	-5	H,L=	1,	3	
16	108	4	2	17	442	14	-0	13	456	9	-7	6	229	5	-8	0	399	33	16
17	395	16	2	18	151	4	5	14	350	7	1	7	225	5	9	1	543	45	21
18	130	4	-0	19	155	4	-3	15	44	3	2	8	670	19	-28	2	219	18	8
19	54	7	3	20	65	6	1	16	351	10	-2	9	134	3	-11	3	561	25	46
20	39	7	4*	21	372	12	-3	17	336	7	3	10	210	4	-4	4	385	18	10
21	299	14	2	22	108	5	-0	18	287	6	-3	11	46	3	-5	5	506	10	3
22	130	4	-3	23	206	5	-1	19	12	19	-9*	12	493	13	-13	6	300	6	3
23	65	5	-1	24	44	6	-3	20	192	4	-4	13	215	8	-8	7	267	6	-10
24	37	6	13	25	294	6	3	21	239	5	-2	14	567	12	-29	8	444	9	-7
25	191	15	-6	26	63	4	10	22	359	8	1	15	140	3	-2	9	439	9	-7
	H,L=	1,	-4	27	166	5	4	23	92	4	1	16	279	11	-9	10	224	5	-6
1	46	8	11	28	23	11	3*	24	60	6	3	17	93	3	4	11	61	4	-4
2	713	19	35	H,L=	1,	-2	25	135	4	0	18	471	13	-16	12	399	8	-15	
3	43	6	-3	1	116	5	-3	26	304	7	-5	19	34	10	8*	13	383	8	-3
4	89	3	2	2	511	15	-16	27	133	4	3	20	266	9	-5	14	196	4	3
5	116	4	-5	3	432	9	-9	28	0	26	-29*	21	24	13	14*	15	92	3	-2
6	572	17	-4	4	108	19	6	29	102	5	1	22	389	8	-3	16	276	6	-1
7	174	4	-9	5	86	2	-2	30	225	9	-7	23	13	22	-16*	17	412	13	-8
8	249	11	3	6	710	14	-10	H,L=	1,	0	24	119	5	-8	18	176	4	1	
9	16	19	15*	7	601	13	-7	1	746	25	-39	25	35	7	16*	19	115	4	1
10	444	17	10	5	343	9	-5	2	277	6	3	26	300	8	0	20	161	4	2

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K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL
23	182	5	-2	18	363	11	-1	13	226	5	0	11	31	14	3*
24	34	6	12	19	13	20	4*	14	398	11	1	12	262	6	9
25	282	15	-0	20	168	10	0	15	20	17	11*	13	335	7	-1
26	102	4	-4	21	169	4	2	16	325	7	-1	14	208	5	4
27	171	5	1	22	395	8	1	17	136	4	-3	15	87	5	-4
28	19	20	17*	23	71	4	-1	13	342	7	-2	16	190	5	1
29	207	20	-2	24	87	4	3	19	53	5	5	17	363	8	3
	H,L=	2,	-1	25	107	4	1	20	275	6	-3	18	155	4	-1
1	247	5	6	26	318	8	7	21	15	29	-4*	19	116	4	9
2	341	7	-8	27	57	5	-8	22	374	8	-0	20	94	4	1
3	340	7	-9	28	40	10	-4*	23	49	6	2	21	297	6	0
4	346	7	-0	29	87	4	1	24	133	4	0	22	136	4	4
5	280	9	-3	H,L=	2,	1	25	63	7	-12	23	100	4	5	6
6	635	19	-5	1	624	55	37	26	273	7	-8	24	35	9	-3*
7	580	14	-2	2	338	7	27	27	61	5	-0	25	196	8	-2
8	428	12	6	3	662	16	-6	28	33	6	27*	26	140	6	-6
9	81	2	1	4	153	3	-3	H,L=	2,	3	H,L=	2,	5	10	287
10	627	18	-6	5	418	10	-11	1	474	43	37	1	106	3	1
11	525	12	-14	6	25	6	13*	2	422	32	33	2	556	47	19
12	311	8	-2	7	744	15	-20	3	551	47	53	3	79	4	1
13	50	3	-3	8	97	3	1	4	108	3	8	4	38	9	12*
14	412	14	-9	9	455	14	-7	5	296	17	34	5	75	5	7
15	351	10	-5	10	50	3	-3	6	402	16	20	6	429	30	17
16	194	8	-1	11	622	14	-21	7	483	13	21	7	79	5	1
17	47	4	-1	12	74	2	-4	8	162	4	6	8	146	4	13
18	218	5	-1	13	34	4	5	9	84	4	3	9	36	8	7*
19	303	14	-1	14	103	3	0	10	207	5	4	10	337	21	6
20	282	15	-2	15	530	15	-13	11	562	11	5	11	50	7	-10
21	77	4	1	16	41	5	7	12	164	4	-3	12	278	14	11
22	77	4	1	17	141	4	-4	13	33	8	-2*	13	60	5	11
23	226	11	-4	18	71	4	7	14	176	4	-1	14	318	12	6
24	263	15	0	19	445	14	-10	15	456	9	-1	15	28	13	-6*
25	148	5	4	20	69	5	2	16	206	5	2	16	317	12	10
26	20	23	-2*	21	163	5	1	17	24	26	2*	17	22	26	17*
27	174	5	2	22	86	5	1	15	114	5	-3	18	202	5	3
28	218	15	-2	23	379	8	5	19	379	8	-2	19	52	6	-5
29	131	5	-2	24	44	6	2	20	235	6	-2	20	255	6	1
	H,L=	2,	0	25	176	4	1	21	55	6	8	21	35	8	-1*
0	634	61	35	26	0	25	-19*	22	110	4	2	22	108	4	1
1	158	4	-1	27	267	16	0	23	244	6	-5	23	83	5	1
2	208	4	-1	28	0	23	-6*	24	136	5	-3	H,L=	2,	6	6
3	74	4	1	29	149	7	-6	25	142	6	7	0	125	13	4
4	814	17	-22	H,L=	2,	2	26	36	7	5*	1	317	25	-3	8
5	268	9	-8	0	996	77	59	27	137	6	-2	2	28	13	-1*
6	159	3	-3	1	52	4	9	H,L=	2,	4	3	217	19	-3	10
7	172	5	3	2	136	3	12	0	381	33	18	4	76	4	2
8	710	18	-22	3	107	3	10	1	439	37	4	5	407	33	10
9	386	12	4	4	810	16	8	2	26	6	11*	6	36	13	4*
10	299	8	-6	5	379	12	7	3	454	38	20	7	94	4	5
11	141	7	-5	6	241	5	10	4	316	27	24	8	27	12	9*
12	491	13	-17	7	55	3	5	5	355	24	18	9	459	31	13
13	302	13	-2	8	626	13	3	6	72	5	6	10	91	4	4
14	321	11	-4	9	367	8	3	7	253	14	12	11	97	3	1
15	0	20	-3*	10	384	8	-1	8	288	15	30	12	58	5	4
16	279	11	-3	11	148	3	-6	9	288	6	13	13	393	24	6
17	231	9	-3	12	440	9	-2	10	175	4	7	14	94	4	3

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K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL
21	323	7	-5	20	0	23	-6*	9	70	3	-5	18	252	18	-3	24	7	21	4*
22	212	5	-3	21	249	6	3	10	86	5	-6	19	16	26	13*	25	227	17	-1
23	100	4	-1	22	37	12	3*	11	193	10	-14	20	126	12	1	26	90	4	3
24	70	5	5	23	125	4	4	H,L=	2,	-8	21	129	5	4	H,L=	2,	-3		
25	212	5	-6	24	41	6	13	0	277	6	-5	22	220	22	0	1	158	4	5
26	186	6	-4	H,L=	1,	6	1	26	15	2*	H,L=	2,	-5	2	685	34	-22		
27	120	4	-3	1	56	6	6	2	59	4	8	1	329	13	18	3	38	4	1
28	16	24	8*	2	339	23	4	3	19	25	8*	2	339	7	31	4	31	4	11
	H,L=	1,	4	3	149	4	6	4	267	6	-0	3	283	6	11	5	40	4	-3
1	151	11	12	4	126	4	7	5	75	4	-5	4	114	4	3	6	767	21	-5
2	753	61	47	5	52	4	7	6	126	4	-2	5	173	4	1	7	72	3	-4
3	252	21	21	6	364	23	8	7	35	9	8*	6	374	20	1	8	154	3	8
4	146	8	4	7	182	11	12	3	277	6	-1	7	274	19	-6	9	0	19	-11*
5	148	4	19	8	238	6	3	9	85	4	4	8	200	5	4	10	400	12	-11
6	661	24	47	9	65	8	-12	10	151	4	-0	9	86	5	1	11	33	5	1
7	265	6	11	10	348	15	12	11	18	20	10*	10	336	15	-2	12	358	13	-3
8	184	4	4	11	178	4	-1	12	252	6	-6	11	286	13	-3	13	23	9	19*
9	136	3	-2	12	201	5	6	13	56	5	-2	12	224	5	-1	14	341	14	-8
10	400	10	2	13	44	6	22	H,L=	2,	-7	13	20	24	6*	15	39	6	1	
11	249	5	2	14	333	13	12	1	272	7	6	14	273	15	6	16	436	16	-9
12	260	6	0	15	136	4	-1	2	97	5	3	15	303	14	-2	17	0	22	-7*
13	66	6	-7	16	171	5	2	3	319	7	2	16	187	4	-2	18	280	12	-3
14	291	6	6	17	27	10	10*	4	5	25	-11*	17	50	6	0	19	78	4	-0
15	199	5	3	18	153	4	-0	5	193	5	10	18	205	5	-3	20	408	14	-7
16	380	8	1	19	70	4	5	6	65	5	12	19	219	20	-2	21	0	22	-5*
17	19	24	19*	20	192	5	-11	7	317	7	7	20	184	5	-2	22	147	11	8
18	184	5	-6	21	48	6	1	8	0	26	-4*	21	57	6	2	23	33	11	4*
19	113	4	-2	H,L=	1,	7	9	118	4	5	22	131	7	8	24	326	7	-0	
20	354	8	1	0	320	21	-1	10	103	6	11	23	153	13	-3	25	21	16	5*
21	51	6	-6	1	209	10	3	11	302	26	10	24	169	6	-4	26	93	3	6
22	123	4	-6	2	25	24	-1*	12	0	31	-4*	25	83	3	0	27	18	20	11*
23	89	6	-3	3	181	5	-2	13	55	5	22	H,L=	2,	-4	28	269	23	2	
24	272	7	-2	4	295	15	7	14	33	33	-4*	0	57	8	-6	H,L=	2,	-2	
25	62	4	5	5	243	16	-0	15	278	27	-4	1	543	20	15	0	234	5	1
26	61	5	-3	6	74	4	-4	16	33	11	19*	2	68	4	12	1	385	19	-27
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1	360	25	12	9	256	6	0	H,L=	2,	-6	5	447	21	-5	4	300	6	-3	
2	43	5	1	10	127	4	-1	0	483	10	3	6	100	4	-9	5	674	17	2
3	272	20	14	11	70	7	2	1	172	4	8	7	206	8	-1	6	95	2	3
4	116	10	18	12	156	4	-3	2	30	15	0*	8	107	3	-2	7	366	12	-11
5	509	31	14	13	225	14	1	3	70	7	8	9	453	13	-11	8	245	5	-1
6	61	6	7	14	122	4	-6	4	506	18	35	10	86	3	-1	9	740	24	-14
7	208	5	11	15	30	7	4*	5	278	6	17	11	44	6	3	10	215	5	10
8	0	24	-21*	16	85	4	-2	6	69	7	-2	12	175	4	-2	11	106	6	10
9	506	10	19	17	202	11	-13	7	85	5	8	13	451	16	-7	12	180	4	2
10	21	24	12*	18	146	4	-3	8	332	22	4	14	119	4	-2	13	521	13	-13
11	123	4	16	H,L=	1,	8	9	282	18	3	15	41	6	-5	14	212	5	-1	
12	36	10	8*	1	196	15	-10	10	164	4	-2	16	143	12	-1	15	33	5	20
13	463	10	8	2	184	12	-7	11	87	5	-2	17	472	22	4	16	231	9	2
14	48	6	18	3	202	11	-9	12	216	17	3	18	78	4	-2	17	444	16	-3
15	24	25	15*	4	20	14	14*	13	222	14	6	19	62	4	-7	18	142	4	9
16	14	28	6*	5	145	4	-4	14	249	17	-1	20	32	9	1*	19	102	3	-3
17	377	8	2	5	142	4	-11	15	63	5	6	21	351	21	1	20	122	3	-8
18	26	12	13*	7	203	13	-12	16	164	4	5	22	56	5	-4	21	361	14	-3
19	79	4	-9	8	0	19	-6*	17	146	4	3	23	97	4	-2	22	102	4	-1

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K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	
8	344	29	12	23	72	4	-5	26	39	6	3	24	57	4	3	
9	70	5	7	24	35	7	-6*	27	140	5	1	25	230	17	1	
10	147	4	4	H,Lz	3,	-4	H,Lz	3,	-2	26	130	4	0	21	145	15
11	26	16	0*	1	238	5	3	1	72	4	-5	27	133	6	-4	
12	265	27	10	2	543	18	6	2	919	26	-5	28	7	24	-6*	
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22	252	8	-2	2	406	32	-20	6	109	4	6	23	212	24	1	
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26	60	4	3	25	109	6	1	25	168	4	19	8	77	5	-13	
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9	497	19	-7	8	532	17	36	10	217	14	8	3	39	8	5*	
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12	269	25	-5	16	34	14	4*	17	296	25	1	21	40	6	4	
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21	18	25	10*	23	97	4	-5	H,L=	5,	3	9	182	18	-5	2	
22	108	4	-5	24	200	29	-5	3	393	40	12	10	109	13	0	
23	66	4	-2	25	54	16	-14*	1	22	14	4*	11	44	5	6	
24	256	29	-8	26	45	5	-1	2	80	5	-5	12	199	21	-9	
25	28	13	-5*	H,L=	5,	1	3	20	24	15*	13	131	4	-2	6	
	H,L=	5,	-1	0	526	54	48	4	468	47	10	14	131	18	-6	7
0	82	5	12	1	286	36	27	5	47	7	15	15	20	20	1*	8
1	541	65	73	2	58	8	-0	6	164	13	13	16	128	18	-12	9
2	133	4	8	3	285	38	29	7	27	13	10*	17	119	4	-7	10
3	414	15	25	4	445	39	57	8	412	43	11	H,L=	5,	6	11	239
4	29	12	14*	5	289	30	21	9	25	16	-11*	1	123	14	-14	12
												0	24		-6*	

STRUCTURE FACTORS CONTINUED FOR  
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K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL
13	29	11	-0*	3	250	6	8	10	50	9	7	17	207	33	-3
14	27	32	12*	4	221	6	8	11	71	7	11	18	232	24	5
15	248	38	-9	5	387	15	8	12	112	5	5	19	34	12	1*
16	10	23	-7*	6	123	23	1*	13	420	35	-3	20	105	21	-2*
17	34	8	-10*	7	212	17	3	14	30	14	-5*	21	167	8	-10
18	18	22	-4*	8	227	23	1	15	41	7	4	22	213	5	22
	H,Lz	6,	-4	9	364	26	-4	16	64	6	0	H,Lz	6,	3	1
0	305	38	0	10	145	7	1	17	311	33	-5	1	322	36	11
1	95	5	-7	11	116	4	1	18	22	26	10*	2	123	26	-1*
2	71	8	-3	12	183	33	-8	19	44	6	4	3	353	40	18
3	92	5	7	13	303	36	-5	20	22	22	14*	4	25	11	14*
4	343	27	5	14	120	4	-3	21	222	30	-8	5	212	25	12
5	124	4	-2	15	46	6	11	22	41	7	-2	6	130	25	-5*
6	96	6	-3	16	143	23	-1	23	96	5	-8	7	347	38	14
7	29	16	-10*	17	261	28	-5	H,Lz	6,	1	8	32	8	12*	2
8	346	39	-2	18	80	4	-6	1	235	28	9	9	76	5	-2
9	117	5	-8	19	96	5	3	2	399	55	27	10	107	15	-6
10	145	18	3	20	68	6	-4	3	196	19	-2	11	332	39	11
11	0	33	-20*	21	235	33	-4	4	48	5	17	12	23	11	14*
12	246	35	-7	22	113	17	-3	5	187	12	17	13	26	10	13*
13	119	4	4	23	101	4	-4	6	336	49	23	14	37	9	-8*
14	181	25	-2	H,Lz	6,	-1	7	238	30	14	15	301	43	-7	9
15	16	28	16*	1	172	30	17	8	175	20	15	16	61	4	4
16	146	24	-7	2	544	66	59	9	84	4	5	17	53	4	6
17	123	13	-2	3	61	9	12	10	272	35	16	18	43	6	-6
18	195	28	-4	4	145	14	5	11	271	27	15	19	253	40	-10
19	36	7	10*	5	144	13	11	12	230	29	20	20	77	21	-6*
20	115	16	-6	6	506	22	18	13	0	27	-5*	H,Lz	6,	4	
21	86	4	-6	7	42	9	30*	14	274	33	16	0	304	38	-9
	H,Lz	6,	-3	8	212	5	1	15	232	14	15	1	27	8	5*
1	146	5	9	9	19	37	6*	16	222	21	11	2	48	4	4
2	330	17	5	10	360	31	-2	17	52	6	9	3	42	5	0
3	287	7	11	11	64	9	11	13	188	25	10	4	298	36	-11
4	80	5	6	12	238	24	-2	19	144	4	7	5	35	8	11*
5	97	9	17	13	44	7	9	20	193	8	0	6	144	4	-24
6	323	24	-10	14	267	30	-8	21	65	5	5	7	24	13	6*
7	360	34	-7	15	72	5	8	22	103	23	-3*	8	304	32	-17
8	92	6	-10	16	238	19	-3	23	122	8	-1	9	23	12	11*
9	129	4	9	17	29	9	24*	H,Lz	6,	2	10	177	20	-7	14
10	240	21	-6	18	163	20	-7	0	47t	54	5	11	20	22	-6*
11	366	39	-5	19	69	5	4	1	223	37	-11	12	248	28	-6
12	163	4	-5	20	239	30	-6	2	24	12	14*	13	18	20	12*
13	73	5	3	21	14	23	3*	3	203	34	1	14	171	21	-10
14	149	14	-2	22	75	5	-7	4	432	44	16	15	25	9	-0*
15	245	35	0	23	59	4	9	5	221	33	-6	16	168	25	-11
16	179	17	-10	H,Lz	6,	0	6	40	7	13	17	17	22	-3*	5
17	23	14	14*	0	65	6	8	7	112	4	4	H,Lz	6,	5	
18	113	4	-1	1	303	33	25	3	255	23	12	1	113	16	-17
19	170	21	0	2	78	6	6	9	181	31	-5	2	152	17	-0
20	176	21	-6	3	299	38	27	10	161	19	10	3	192	24	-27
21	76	5	7	4	38	9	14*	11	41	6	1	4	14	19	6*
22	87	4	-1	5	391	50	45	12	210	27	-0	5	93	3	-8
	H,Lz	6,	-2	6	108	5	7	13	174	26	3	6	126	10	0
0	272	44	34	7	152	4	4	14	239	25	14	7	224	29	-23
1	356	43	38	8	115	5	-1	15	0	27	-2*	8	30	7	2*
2	46	8	12	9	453	31	17	16	157	26	-3	9	82	4	-6

STRUCTURE FACTORS CONTINUED FOR  
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K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL	K	FOB	SG	DEL						
16	18	23	6*	11	68	5	4	2	311	47	3	6	62	3	-12						
17	44	7	-4	12	131	16	9	3	210	17	3	H, L=	8,	-5	14	164	26	5			
				H, L=	7,	-3	13	276	30	-0		4	65	5	3	126	7	-28			
0	423	67	54	14	65	5	9	5	109	4	12	2	101	7	-14	15	25	15	13*		
1	96	7	3	15	23	25	16*	6	276	43	7	3	164	6	-37	H, L=	8,	-1			
2	48	10	6*	16	59	5	-0	7	206	22	8	4	20	32	7*	1	107	26	6*		
3	124	4	0	17	232	31	-5	8	109	19	11	5	90	7	-14	2	354	60	11		
4	321	23	16	18	85	15	4*	9	64	4	2	6	79	7	-14	3	132	25	3*		
5	100	5	-4	19	66	5	-0	10	197	32	1	7	196	38	-15*	4	24	12	14*		
6	117	5	-2	20	30	16	-5*	11	179	22	5	8	56	6	0	5	79	7	3		
7	83	5	3	21	216	41	-6*	12	128	17	2	9	76	4	1	6	245	41	3		
8	296	34	2	H, L=	7,	0	13	13	21	-2*	H, L=	8,	-4		7	156	29	5			
9	137	15	-4	1	32	9	27*	14	159	26	0	0	266	14	-41	8	58	6	-7		
10	159	7	-7	2	361	54	22	15	155	6	5	1	60	10	-3	9	88	5	4		
11	29	12	24*	3	34	15	4*	16	173	31	-8	2	0	47	-14*	10	166	25	3		
12	250	35	-7	4	107	4	8	17	33	7	-6*	3	71	7	-6	11	148	32	7*		
13	137	4	-6	5	13	27	0*	18	121	26	-12*	4	247	7	-28	12	138	21	4		
14	178	27	-13	6	380	55	20	H, L=	7,	3	5	28	19	24*	13	37	7	11*			
15	32	9	17*	7	55	7	11	0	278	38	-24	6	72	7	1	14	132	27	-2*		
16	162	32	-5*	8	216	29	15	1	127	17	-4	7	32	15	1*	15	128	30	-2*		
17	136	12	-7	9	36	9	13*	2	24	10	-0*	8	221	31	-16	16	189	38	5*		
18	170	24	-9	10	384	58	19	3	154	25	-7	9	13	25	2*	17	18	21	-3*		
19	22	22	12*	11	76	5	13	4	253	30	-9	10	120	17	-5	H, L=	8,	0			
			H, L=	7,	-2	12	194	32	7	5	99	19	-17*	11	37	6	5*	0	71	5	7
1	162	32	18*	13	0	24	-4*	6	82	4	-8	12	179	27	-15	1	262	46	10		
2	390	60	39	14	279	44	14	7	101	4	-14	13	28	11	7*	2	38	8	9*		
3	275	48	37	15	37	12	18*	8	218	29	-11	H, L=	8,	-3		3	200	35	3		
4	28	28	18*	16	186	29	11	9	90	5	-12	1	242	45	26*	4	94	5	1		
5	72	12	3	17	20	29	9*	10	98	13	-4	2	54	8	5	5	306	51	11		
6	280	18	13	18	145	25	1	11	17	19	7*	3	262	47	23	6	36	7	6*		
7	253	23	5	19	34	8	23*	12	155	25	-14	4	30	30	2*	7	129	6	0		
8	78	7	5	28	240	7	35	13	109	23	-18*	5	153	21	11	8	108	25	5*		
9	66	5	0	H, L=	7,	1	14	167	5	10	6	63	7	-6	9	305	51	1			
10	176	19	-4	0	132	5	6	15	31	7	-1*	7	231	24	7	10	15	27	6*		
11	253	30	-1	1	280	41	2	16	113	21	-14*	8	90	4	11	11	66	5	4		
12	156	20	-1	2	11	22	-6*	H, L=	7,	4	9	62	9	-2	12	59	5	-1			
13	59	7	0	3	173	24	-3	1	156	20	-11	10	83	5	5	13	259	45	-2		
14	124	5	-2	4	142	12	19	2	35	6	-7	11	242	40	-11	14	38	6	11		
15	198	30	-2	5	398	60	21	3	195	26	-18	12	55	6	4	15	0	21	-16*		
16	189	25	-1	6	66	12	7*	4	28	8	14*	13	15	27	3*	16	22	18	-2*		
17	11	25	2*	7	112	25	4*	5	133	22	-14	14	62	5	-2	H, L=	8,	1			
18	106	5	-3	8	138	18	10	6	25	11	-12*	15	234	36	-13	1	22	24	-1*		
19	154	23	-1	9	397	59	13	7	214	27	-22	H, L=	8,	-2		2	244	41	-6		
20	170	27	-8	10	107	4	3	8	23	8	22*	0	308	64	20*	3	18	21	11*		
			H, L=	7,	-1	11	81	5	-6	9	60	5	-9	1	171	27	10	4	137	24	-1
0	166	41	18*	12	132	4	11	10	24	12	10*	2	62	5	14	5	22	14	8*		
1	307	45	25	13	333	51	14	11	226	34	-21	3	155	27	2	6	292	46	-5		
2	26	24	1*	14	71	5	4	12	14	18	-0*	4	279	59	30*	7	41	6	24		
3	258	37	24	15	36	8	6*	13	27	6	6*	5	135	21	9	8	148	27	-6		
4	161	37	16*	16	47	7	9	H, L=	7,	5	6	92	6	11	9	0	34	-2*			
5	326	44	34	17	255	45	-10	0	201	32	-37	7	66	6	-4	10	264	49	-8*		
6	74	28	12*	18	63	10	1	1	50	5	-9	8	205	38	5*	11	40	5	18		
7	161	6	11	19	29	20	-5*	2	22	15	-4*	9	114	5	-4	12	139	23	-7		
8	151	27	12	20	19	19	-1*	3	58	4	-5	10	128	5	11	13	20	20	6*		
9	293	25	3	H, L=	7,	2	4	199	28	-40	11	18	25	11*	14	191	40	-8*			
10	75	5	4	1	168	24	-0	5	49	5	2	12	184	27	3	15	29	8	9*		

STRUCTURE FACTORS CONTINUED FOR  
ALPHA C<sub>8</sub>H<sub>8</sub>.THCl<sub>2</sub>.2(DC<sub>4</sub>H<sub>8</sub>)

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OBSERVED STRUCTURE FACTORS, STANDARD DEVIATIONS, AND DIFFERENCES (ALL X 2.0)  
 BETA C8H8.THCL2.2(OC4H8) F(0,0,0) = 4102

F0B AND FCA ARE THE OBSERVED AND CALCULATED STRUCTURE FACTORS.

SG = ESTIMATED STANDARD DEVIATION OF F0B. DEL = |F0B| - |FCA|.

\* INDICATES ZERO WEIGHTED DATA.

L	F0B	SG	DEL	L	F0B	SG	DEL	L	F0B	SG	DEL	L	F0B	SG	DEL	
H,K= 0, 0	10	146	5	6	7	76	8	-17	7	32	35	-16*	11	360	14	6
2 319 10 4	11	395	12	-10	5	372	12	-7	8	461	16	26	12	490	17	41
41095 34 15	12	210	7	-7	9	317	10	17	9	54	20	5*	13	297	11	19
6 773 24 -15	13	82	6	-8	10	204	7	-5	10	315	11	9	14	33	34	29*
8 252 8 -12	14	140	6	0	11	254	9	-2	11	48	31	-5*	15	253	13	2
10 239 8 -5	15	43	14	-11*	12	530	28	-8	12	644	23	20	16	394	14	23
12 33 11 18*	15	106	7	-9	13	60	12	8*	13	67	30	22*	17	260	13	17
14 108 5 -5	17	286	10	-1	14	76	12	21	14	35	49	16*	18	101	27	-17*
16 13 33 -17*	18	158	8	-5	15	29	45	22*	15	128	10	5	19	21	34	-15*
18 340 12 -4	19	183	8	1	16	398	14	19	16	563	21	20	20	131	21	-14
20 255 11 1	20	302	12	4	17	183	8	12	17	37	38	32*	21	106	22	-22*
22 332 15 -5	21	121	10	-6	18	43	44	-13*	18	161	9	-2	H,K= 0,	9		
24 378 16 -6	22	153	13	2	19	230	12	1	19	136	16	-4	1	321	11	-8
26 102 16 -7	23	220	15	-11	20	271	36	5	20	238	10	29	2	213	8	2
H,K= 0, 1	24	215	16	-3	21	81	11	-5	21	41	20	14*	3	528	21	-7
1 219 10 -5	25	52	22	-19*	22	28	37	25*	22	123	15	-17	4	0	45	-16*
2 218 10 -12	26	100	21	-7*	23	216	16	-5	23	114	20	-20	5	60	14	0*
3 330 17 -13	H,K= 0,	3	24	121	14	-11			H,K= 0,	7	6	299	13	3		
4 411 16 -8	1	90	18	12*	25	58	14	8*	1	256	9	17	7	358	15	10
5 39 9 10*	2	685	21	17	H,K= 0,	5			2	723	23	16	8	132	8	8
6 247 8 -6	3	102	10	4	1	206	7	7	3	307	10	22	9	201	15	2
7 139 5 4	4	219	8	-8	2	889	28	35	4	388	14	8	10	131	9	3
8 565 18 0	5	212	8	3	3	221	8	3	5	154	9	15	11	13	46	5*
9 203 7 -1	6	432	13	-7	4	250	8	14	6	445	15	24	12	45	15	7*
10 977 30 0	7	400	13	2	5	328	10	9	7	137	7	8	13	75	14	3*
11 136 5 5	8	119	5	1	6	549	17	12	8	374	12	20	14	119	9	2
12 218 7 -4	9	525	16	-6	7	62	17	27*	9	40	24	11*	15	124	12	2
13 186 6 -1	10	498	15	-1	3	388	13	1	10	24	39	15*	16	85	8	2
14 643 20 -6	11	153	7	-1	9	407	14	12	11	112	8	10	17	134	22	-26
15 175 6 -0	12	162	7	-10	10	211	7	5	12	52	18	10*	18	137	25	-10*
16 90 12 -14	13	390	12	-5	11	172	7	1	13	85	13	9	19	109	23	-28*
17 61 11 -4*	14	316	11	-1	12	54	14	5*	14	53	18	7*	H,K= 0,	10		
18 447 15 -6	15	430	14	-10	13	22d	8	3	15	80	20	-10*	0	204	12	-1
19 139 9 3	16	43	26	-13*	14	88	13	-7	16	181	9	-1	1	124	7	2
20 244 10 4	17	98	9	-2	15	233	10	-1	17	128	16	-1	2	73	9	2
21 128 7 4	18	283	10	8	16	179	9	-4	18	51	17	-1*	3	114	10	-2
22 166 7 7	19	234	11	-2	17	194	9	-5	19	22	37	-27*	4	278	12	-4
23 53 14 33*	20	39	40	28*	18	150	11	-7	20	325	12	29	5	112	12	0
24 79 10 19	21	142	8	1	19	138	8	2	21	128	23	-11	6	137	10	1
25 100 14 -1	22	269	12	14	20	243	14	6	22	258	10	22	7	359	21	-12
26 55 17 41*	23	46	18	11*	21	44	22	9*	H,K= 0,	8	8	8	176	11	1	
H,K= 0, 2	24	70	19	-9*	22	265	10	30	0	102	9	11	9	0	34	-8*
0 899 28 32	25	92	13	-7	23	38	25	5*	1	261	10	7	10	101	7	8
1 680 21 22	26	128	30	-21*	24	156	19	9	2	102	9	3	11	398	23	-20
2 223 11 -8	H,K= 0,	4	H,K= 0,	4	H,K= 0,	6	3	126	7	10	12	49	26	-15*		
3 34 39 15*	0	602	19	15	0	274	10	16	4	107	9	7	13	205	17	-10
4 731 29 -51	1	407	13	22	1	357	11	20	5	120	8	24	14	33	26	3*
5 639 25 -29	2	192	8	8	2	328	11	2	6	243	8	9	15	159	32	-34*
6 31 17 -5*	3	65	10	1	3	46	15	14*	7	432	15	13	16	112	20	-5
7 312 10 -11	4	390	12	16	4	53	10	34*	8	280	10	19	17	242	12	-8
8 550 17 -17	5	643	20	8	5	353	12	6	9	83	12	14	H,K= 0,	11		
9 203 7 -8	6	318	11	5	6	404	13	17	10	198	8	1	1	222	16	-25

STRUCTURE FACTORS CONTINUED FOR  
BETA C8H8.THCL2.2(OC4H8)

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L	F08	SG	DEL	L	F08	SG	DEL	L	F08	SG	DEL	L	F08	SG	DEL				
2	40	14	1*	H,K=	1,	1	-26	49	18	15*-24	59	13	26*-21	92	12	-5			
3	284	16	-30	-27	116	42	-3*-25	93	10	-6	-23	145	11	9	-20	333	36	4	
4	100	9	-6	-26	356	13	27	-24	133	9	1	-22	259	9	1	-19	158	11	9
5	77	10	-7	-25	60	16	-13*-23	152	11	2	-21	273	12	20	-18	0	42	-22*	
6	70	9	-6	-24	39	42	12*-22	135	9	-7	-20	101	27	-4*-17	321	11	4		
7	192	15	-22	-23	81	10	-5	-21	0	46	-13*-19	58	16	5*-16	297	11	7		
8	190	16	-30	-22	442	18	-13	-20	206	8	-7	-18	350	13	-3	-15	42	45	35*
9	51	37	-19*-21	176	10	-22	-19	156	10	-15	-17	265	9	1	-14	101	7	9	
10	183	14	-25	-20	190	9	3	-18	240	10	-6	-16	34	46	-5*-13	469	25	1	
11	41	14	16*-19	120	9	-8	-17	348	15	-12	-15	179	7	-1	-12	234	8	2	
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												3	18	228	13	-3

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-9	229	7	-12	-5	450	14	-16	1	83	10	-8	7	324	20	-6
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19	42	18	3* -9	212	3	5	9	280	18	-15	5	157	15	-28 -15	186	7	-0		
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-19	100	9	13	-4	432	25	23	14	133	16	-26	H,K=	5,	12	-10	769	24	-16	
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L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
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-12	170	7	5	-5	230	8	-7	3	226	21	-1	13	268	13	-8	-17	124	8	13
-11	299	15	-15	-4	170	7	-10	4	173	7	-4	14	71	30	20*	-16	180	8	4
-10	77	9	31	-3	375	13	-1	5	414	32	-20	15	118	10	2	-15	40	23	24*
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-7	348	11	-7	0	19	39	-19*	8	287	22	-1	18	63	11	-6	-12	89	17	16*
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-2	260	8	0	5	115	8	-1	13	86	14	6	-21	102	13	18	-7	153	8	28
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L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
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6	264	17	-9	-3	130	7	-1	18	104	21	-9*	-21	79	11	5	-12	224	10	-2
7	240	16	-18	-2	34	29	-3*	20	203	15	-2	-20	142	7	1	-11	127	11	-8
8	241	14	-18	-1	52	33	-16*	H, K*	7,	1	-19	236	11	-6	-10	231	8	-6	
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-9	266	9	-1	2	46	52	12*	15	66	10	0	-5	308	27	15	-9	54	19	-4*
-8	200	8	7	3	109	10	-2	16	79	10	-3	-4	239	10	16	-8	140	8	8
-7	375	19	11	4	192	8	-3	17	0	32	-9*	-3	72	15	19*	-7	181	19	-2
-6	355	23	20	5	122	9	6	H,Kz	7,	7	-2	306	26	13	-6	30	31	24*	
-5	56	13	44*	6	45	26	35*	-21	37	27	11*	-1	428	35	13	-5	241	26	-10
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-3	339	12	10	8	380	45	-14	-19	145	7	13	1	133	8	9	-3	83	8	0
-2	381	31	11	9	64	17	-16*	-16	125	8	-5	2	165	8	3	-2	29	31	-6*
-1	111	9	9	10	118	12	-8	-17	48	17	5*	3	282	16	-15	-1	320	16	-30
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6	199	10	-12	-1	172	8	-9	-21	0	40	-56*	-8	246	9	-9	5	260	15	-7
7	9	39	-12*	0	203	42	-21*-20	253	10	-13	-7	46	24	-3*	6	56	24	-7*	
8	30	36	-3*	1	301	17	-23	-19	44	20	8*	-6	269	11	-20	7	105	11	-10
9	55	30	-2*	2	55	10	19	-18	195	10	-12	-5	144	9	4	8	194	11	-5
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-22	113	7	6	-3	73	27	-2*	-11	76	11	-11	-20	49	32	-7*
-21	26	36	1*	-2	450	15	40	-10	73	13	11*	-18	275	10	-14
-20	135	8	3	-1	60	31	-6*	-9	64	20	6*-16	140	9	-5	H,K=
-19	127	10	-6	0	147	11	-5	-6	166	7	6	-14	110	22	-6*-23
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-14	137	8	16	5	59	14	-3*	-3	256	27	17	-4	400	28	-33
-13	30	40	-15*	6	213	34	-15	-2	245	24	5	-2	232	11	-12
-12	545	19	19	7	23	38	16*	-1	112	9	0	0	460	46	-28
-11	37	40	24*	8	142	10	-7	0	115	9	1	2	462	51	0
-10	82	12	-2	9	53	26	-5*	1	242	46	-13*	4	244	10	10
-9	181	10	8	10	0	36	-46*	2	252	13	-4	6	326	24	-25
-8	403	34	13	11	41	47	22*	3	197	14	-15	8	35	44	26*-12
-7	127	12	10	12	32	33	6*	4	59	13	42*	10	50	31	-35*-11
-6	271	26	20	13	58	18	-21*	5	70	11	11	12	45	48	35*-10
-5	286	11	14	H,K=	9,	7	6	144	45	-19*	14	26	46	-16*	-9
-4	123	13	4	-19	25	39	-8*	7	135	13	-5	H,K=	10,	1	-8
-3	41	46	29*-18	173	9	4	8	79	7	3	-23	0	42	-37*	-7
-2	106	11	21	-17	168	7	4	9	38	17	8*-22	192	12	-5	-6
-1	326	25	38	-16	332	12	9	H,K=	9,	9	-21	31	41	9*	-5
0	63	23	45*-15	127	8	4	-14	46	12	15*-20	20	42	-1*	-4	409
1	186	12	19	-14	35	43	10*	-13	212	10	-12	-19	99	10	0
2	123	10	16	-13	112	11	9	-12	224	10	-10	-18	266	25	-9
3	96	13	-3	-12	386	24	17	-11	272	12	-6	-17	91	9	-0
4	93	20	15*-11	193	8	10	-10	13	35	1*	-16	265	10	-18	0
5	191	9	7	-10	87	14	7	-9	126	6	4	-15	39	32	17*
6	205	49	-23*	-9	153	5	10	-8	207	10	5	-14	300	13	-21
7	54	19	-13*	-8	342	22	22	-7	246	10	-5	-13	78	13	-7
8	163	31	-15*	-7	168	8	15	-6	21	39	-11*-12	385	15	-19	4
9	95	9	1	-5	184	8	14	-5	55	13	-11*-11	44	24	18*	5
10	179	23	-30	-5	50	18	11*	-4	97	7	2	-10	156	7	4
11	34	37	11*	-4	119	8	10	-3	82	9	4	-9	87	11	-4
12	288	14	20	-3	90	12	11	-2	48	20	14*	-8	449	27	-32
13	0	35	-27*	-2	109	9	9	-1	63	20	-4*	-7	76	12	6
14	44	22	-9*	-1	40	33	10*	0	75	13	-3	-6	68	12	35
	H,K=	9,	6	0	52	18	8*	1	51	16	-20*	-5	0	46	-12*
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-20	222	11	-0	2	127	9	-5	3	40	15	3*	-3	144	9	-10
-19	105	8	-10	3	107	8	-6	4	75	11	-5	-2	73	16	44*
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-17	77	11	6	5	82	13	24*	6	44	12	-14*	0	0	51	-12*
-16	159	8	3	6	204	14	-19	H,K=	9,	10	1	56	31	43*	-22
-15	82	10	9	7	108	15	-7	-5	11	37	-11*	2	181	13	10
-14	69	15	65*	8	134	10	-11	-7	205	13	-24	3	137	12	15
-13	152	8	7	9	35	37	21*	-6	102	8	-5	4	49	56	22*-19
-12	79	12	8	10	132	23	-28*	-5	19	30	-18*	5	131	21	15
-11	145	12	15	11	102	15	-19	-4	17	29	9*	6	316	27	-14
-10	80	14	-4	H,K=	9,	8	-3	254	19	-33	7	37	55	25*	-16
-9	88	12	11	-17	90	8	-10	-2	34	7	-4	8	0	49	-23*-15
-8	317	12	27	-16	107	7	0	-1	126	10	-19	9	92	17	-1*-14

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L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL		
-13	333	14	-9	5	86	22	-7*	-7	135	10	25	-6	159	23	8		
-12	238	10	-4	6	82	11	-10	-6	275	10	21	-5	123	7	5		
-11	139	10	-7	7	162	60	-16*	-5	66	14	20*	-4	46	16	21*-11		
-10	125	10	12	8	197	13	-17	-4	90	10	32	-3	25	38	9*-10		
-9	294	12	2	9	0	40	-6*	-3	59	18	2*	-2	31	36	-23*-9		
-8	232	27	-6	10	87	9	13	-2	93	11	3	-1	68	10	0		
-7	271	27	-2	11	57	25	-16*	-1	78	12	23	0	29	41	17*-7		
-6	139	9	6	12	165	26	-32	0	54	24	24*	1	47	13	24*-6		
-5	168	9	6	13	56	36	-8*	1	154	11	2	2	25	33	2*-5		
-4	188	8	-1	H,K=	10,	5	2	94	10	5	3	77	14	-22	-4		
-3	124	10	1	-20	218	11	-6	3	0	44	-7*	4	72	8	-12		
-2	222	10	-8	-13	110	8	10	4	163	28	-10	5	37	16	7*-2		
-1	232	33	-4	-18	79	11	6	5	78	15	-23*	6	22	34	12*-1		
0	86	16	-8*-17	225	11	10	6	17	39	-25*	H,K=	10,	9	0	94		
1	113	11	-1	-16	138	8	0	7	35	44	-2*-10	89	13	-11	1		
2	207	33	3	-15	46	22	37*	8	264	10	13	-9	42	12	35*		
3	53	49	-16*-14	41	30	35*	9	74	11	18	-8	46	18	34*	3		
4	144	14	-9	-13	215	9	13	10	95	15	-9	-7	194	12	-13		
5	164	24	-14	-12	56	18	37*	11	0	44	-3*	-6	171	34	-1*		
6	191	21	-19	-11	62	28	-18*	H,K=	10,	7	-5	184	13	-11	6		
7	81	13	9	-10	175	10	8	-17	51	13	-6*	-4	99	7	9		
8	105	17	-12	-9	189	9	9	-16	89	10	-10	-3	112	30	-7*		
9	138	18	-9	-8	42	29	25*-15	0	43	-11*	-2	115	17	-12	9		
10	190	9	15	-7	131	12	3	-14	41	21	26*	-1	263	17	-25		
11	255	10	26	-6	392	41	19	-13	62	13	6*	0	149	14	-10		
12	68	42	-8*	-5	0	45	-24*-12	13	37	3*	1	33	28	-2*	12		
13	34	40	7*	-4	217	29	17	-11	63	12	22*	2	47	12	-1*		
14	95	26	-17*	-3	104	12	23	-10	132	7	11	H,K=	11,	0	H,K=		
	H,K=	10,	4	-2	361	45	24	-9	153	7	15	-22	88	14	-17	-21	
-22	89	9	-6	-1	102	10	17	-8	64	12	17*	-20	179	8	-4	-20	
-21	224	10	0	0	364	31	26	-7	95	12	9	-18	82	10	-9	-19	
-20	150	12	-1	1	36	51	15*	-6	281	37	12	-16	433	19	-27	-18	
-19	40	40	5*	2	174	8	15	-5	79	12	12	-14	185	9	-9	-17	
-18	159	8	11	3	53	34	23*	-4	38	40	-3*-12	466	38	-35	-16		
-17	158	8	6	4	265	12	-8	-3	30	39	7*-10	302	15	-20	-15		
-16	227	9	1	5	129	9	-9	-2	332	28	15	-8	253	10	-15	-14	
-15	170	8	4	6	8	48	-24*	-1	165	10	10	-6	328	13	-32	-13	
-14	288	12	3	7	70	13	8*	0	207	13	-9	-4	178	9	-19	-12	
-13	34	39	12*	8	123	20	-25	1	32	42	29*	-2	130	10	-4	-11	
-12	274	11	11	9	75	18	-25*	2	180	36	-12*	0	0	52	-16*-10	149	
-11	118	9	0	10	37	26	33*	3	139	32	-13*	2	161	10	-4	-9	
-10	340	14	2	11	188	8	6	4	272	72	-26*	4	69	20	-6*	-8	
-9	273	38	10	12	0	34	-13*	5	56	13	-0*	6	207	21	-4	-7	
-8	70	16	-3*	H,K=	10,	6	6	10	35	8*	8	204	33	-51	-6		
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-4	47	35	5*-16	334	23	17	H,K=	10,	8	-22	178	10	-14	-2	21	47	
-3	255	37	19	-15	69	17	11*-14	199	10	-3	-21	103	10	-8	-1	194	
-2	124	10	10	-14	338	12	26	-13	67	10	-2	-20	238	9	-7	0	
-1	37	46	5*-13	41	26	30*	-12	179	8	-0	-19	121	9	-1	1	108	
0	141	9	9	-12	205	10	12	-11	255	11	15	-18	41	23	2*	2	64
1	299	36	14	-11	123	16	1	-10	262	30	5	-17	41	22	26*	3	42
2	77	22	7*-10	393	14	30	-9	131	7	5	-16	209	11	-9	4	168	
3	181	11	9	-9	49	21	10*	-8	44	21	-4*-15	103	8	12	5	140	
4	162	15	-24	-8	48	20	34*	-7	160	8	7	-14	53	20	-11*	6	35

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L	F0B	SG	DEL	L	F0B	SG	DEL	L	F0B	SG	DEL	L	F0B	SG	DEL	L	F0B	SG	DEL
7	113	43	-39*	-5	52	17	48*	-10	162	9	20	H, Kz	12,	0	-13	144	8	11	
8	148	46	-54*	-5	172	8	7	-9	48	21	36*	-20	237	13	-9	-12	154	8	-10
9	0	59	-14*	-4	376	62	5	-8	190	10	16	-18	210	11	-11	-11	152	9	-8
10	38	39	-2*	-3	39	40	23*	-7	117	9	19	-16	119	11	-0	-10	101	9	4
11	119	33	-38*	-2	56	23	7*	-6	121	9	8	-14	54	17	13*	-9	0	44	-28*
12	187	9	5	-1	120	13	-11	-5	62	17	44*	-12	54	13	44*	-8	135	10	-5
	H, Kz	11,	3	0	274	51	-3*	-4	295	33	13	-10	262	11	-16	-7	131	8	8
-21	169	7	10	1	94	26	9*	-3	90	11	15	-8	124	11	-6	-6	170	11	-6
-20	49	19	-13*	2	103	10	-3	-2	31	47	30*	-6	254	10	-10	-5	168	8	8
-19	120	8	-3	3	54	32	-5*	-1	62	15	29*	-4	327	31	-25	-4	200	35	-21
-18	152	8	0	4	143	20	-25	0	377	43	16	-2	170	13	-32	-3	48	28	33*
-17	43	27	24*	5	30	40	-1*	1	71	13	7*	0	349	68	-27*	-2	197	10	7
-16	113	8	15	6	57	17	-1*	2	163	8	4	2	32	48	-17*	-1	189	50	-6*
-15	89	10	-4	7	138	17	-25	3	49	19	1*	4	334	12	31	0	257	65	-6*
-14	233	13	-4	8	123	24	-13*	4	217	51	-10*	6	111	20	-9	1	121	12	-2
-13	140	14	-7	9	29	39	-20*	5	0	36	-7*	8	94	40	-49*	2	80	13	27
-12	105	10	0	10	10	39	-18*	6	172	16	-22	10	41	52	-20*	3	86	14	-13
-11	35	40	23*	11	114	33	-37*	7	96	8	-7	H, Kz	12,	1	4	182	31	-37	
-10	216	12	-2	H, Kz	11,	5	8	50	12	-8*	-20	166	11	1	5	117	23	-24*	
-9	146	10	-3	-19	54	27	-9*	H, Kz	11,	7	-19	68	12	2	6	50	63	34*	
-8	91	9	22	-18	230	13	16	-15	96	8	14	-18	234	11	-8	7	32	44	-10*
-7	274	37	3	-17	77	13	24	-14	313	18	-2	-17	66	18	7*	8	99	34	-39*
-6	255	42	-12	-16	91	8	25	-13	122	8	-5	-16	125	8	-0	9	43	34	-17*
-5	50	28	13*-15	51	19	-2*	-12	170	11	23	-15	118	9	-13	H, Kz	12,	3		
-4	66	23	6*-14	347	12	20	-11.	22	36	15*-14	406	17	-34	-19	180	15	-6		
-3	252	41	16	-13	79	12	6	-10	263	10	14	-13	65	18	-9*-18	179	11	-3	
-2	259	47	-2	-12	138	8	8	-9	160	7	9	-12	71	12	-0	-17	14	43	-0*
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0	70	15	21*-10	278	31	18	-7	4d	49	29*	-10	388	44	-20	-15	184	12	-3	
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2	183	46	-1*	-8	243	25	11	-5	94	9	13	-8	99	9	5	-13	98	10	-7
3	244	46	-1*	-7	193	11	9	-4	164	9	9	-7	72	17	-3*-12	55	33	-1*	
4	0	49	-21*	-5	95	12	5	-3	30	37	21*	-6	212	10	-14	-11	123	8	-6
5	66	25	-11*	-5	35	44	10*	-2	35	38	0*	-5	75	13	-7	-10	206	26	-2
6	140	27	-33*	-4	167	8	16	-1	83	11	19	-4	91	21	-13*	-9	240	29	-6
7	96	34	-11*	-3	138	10	13	0	14	37	-2*	-3	76	15	4*	-8	85	12	-10
8	56	25	49*	-2	33	41	3*	1	12	38	-6*	-2	53	25	12*	-7	12	43	-16*
9	85	12	-19	-1	174	8	13	2	35	23	26*	-1	46	52	8*	-6	216	35	2
10	120	41	-37*	0	65	14	36*	3	32	33	15*	0	0	56	-67*	-5	182	55	-2*
11	26	37	16*	1	21	46	-37*	4	128	43	-8*	1	60	20	-4*	-4	78	12	12
12	16	39	15*	2	80	15	4*	5	71	13	-12	2	14	48	-12*	-3	170	43	1*
	H, Kz	11,	4	3	211	25	6	H, Kz	11,	3	3	94	18	6*	-2	181	45	5*	
-20	126	7	3	4	85	11	-6	-11	68	10	2	4	137	35	-17*	-1	75	12	47
-19	75	12	-13	5	33	47	4*	-10	86	9	14	5	0	47	-17*	0	35	50	-27*
-18	122	8	10	6	153	13	-24	-7	110	10	-8	6	52	63	-43*	1	51	27	-8*
-17	234	10	2	7	76	14	-24*	-8	128	7	9	7	69	77	-20*	2	127	52	-14*
-16	143	8	10	9	45	37	-17*	-7	35	43	15*	8	184	11	4	3	129	54	3*
-15	173	8	6	9	57	12	9*	-6	104	30	5*	9	66	24	-18*	4	55	20	3*
-14	108	8	10	H, Kz	11,	6	-5	183	10	9	10	139	43	-46*	5	74	32	-18*	
-13	72	15	13*-17	135	23	11	-4	218	39	-1	H, Kz	12,	2	6	131	25	-14*		
-12	157	9	7	-16	48	20	18*	-3	84	8	-3	-19	122	9	-10	7	92	21	-18*
-11	253	12	3	-15	108	9	10	-2	37	26	23*-18	72	12	6	8	45	55	-22*	
-10	40	51	23*-14	23	38	1*	-1	147	11	8	-17	128	8	5	9	110	39	-30*	
-9	54	20	-10*-13	60	15	-4*	0	277	10	26	-16	130	8	-13	H, Kz	12,	4		
-8	227	40	6	-12	36	50	-11*	1	204	13	-13	-15	39	57	-1*-18	83	10	18	
-7	152	8	9	-11	149	11	9	2	110	56	-21*-14	66	11	53	-17	69	15	-8*	

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L	F08	SG	DEL	L	F08	SG	DEL	L	F08	SG	DEL	L	F08	SG	DEL	L	F08	SG	DEL
-16	252	10	14	-8	256	11	17	0	207	66	-17*-14	76	10	0	-3	60	17	11*	
-15	55	16	28*	-7	45	47	10*	1	48	59	-10*-13	196	40	11*	-2	66	17	-10*	
-14	65	19	17*	-6	140	8	11	2	178	26	-39	-12	95	9	-5	-1	32	41	17*
-13	118	8	9	-5	130	8	10	3	0	44	-23*-11	101	9	-4	0	62	14	13*	
-12	265	12	3	-4	135	7	28	4	74	18	-25*-10	126	8	3	1	45	32	-11*	
-11	82	11	8	-3	53	28	14*	5	31	49	5*	-9	179	10	12	H,K=	14,	2	
-10	47	52	2*	-2	84	13	9	6	211	10	5	-8	80	11	7	-12	38	41	34*
-9	67	12	31*	-1	99	10	5	H,K=	13,	2	-7	148	8	6	-11	0	39	-6*	
-8	232	10	5	0	0	39	-8*-17	123	10	-5	-6	149	34	-14*-10	121	12	11		
-7	118	10	2	1	62	15	-16*-16	160	10	-7	-5	71	17	9*	-9	53	21	-20*	
-6	41	33	2*	2	84	9	4	-15	35	47	-14*	-4	89	10	7	-8	65	12	6*
-5	169	34	12*	3	77	14	-18	-14	197	9	-1	-3	146	11	32	-7	112	10	-21
-4	188	38	11*	4	27	32	16*-13	160	10	-4	-2	182	48	-11*	-6	134	50	-14*	
-3	0	44	-34*	H,K=	12,	7	-12	189	10	-6	-1	91	15	6	-5	38	43	31*	
-2	55	16	52*-10	36	47	7*	-11	125	8	6	0	127	40	-16*	-4	37	43	1*	
-1	235	52	7*	-9	12	35	2*-10	178	10	-7	1	33	39	14*	-3	123	45	-18*	
0	74	15	-12*	-8	204	14	6	-9	120	10	1	2	120	17	-14	-2	205	97	-39*
1	159	44	6*	-7	81	14	1	-8	153	34	-2*	3	57	13	3*	-1	83	12	-2
2	80	26	-11*	-6	139	32	-1*	-7	175	36	5*	H,K=	13,	5	0	38	39	25*	
3	130	10	-12	-5	43	30	19*	-6	78	15	13*-12	181	33	3	H,K=	14,	3		
4	88	25	-26*	-4	171	12	-6	-5	26	43	18*-11	49	53	1*-10	38	40	-10*		
5	100	49	-37*	-3	99	9	3	-4	170	51	-14*-10	242	10	6	-9	27	38	-18*	
6	71	34	-33*	-2	256	54	-7*	-3	83	14	-15	-9	88	11	-0	-8	150	10	3
7	0	38	-6*	-1	38	42	6*	-2	0	45	-9*	-8	87	12	7	-7	127	13	-9
8	105	35	-26*	0	55	20	-6*	-1	91	14	-17	-7	111	9	7	-6	69	14	12*
H,K=	12,	5	H,K=	13,	0	0	45	56	4*	-6	219	42	17*	-5	85	17	-9*		
-16	50	29	-11*-16	185	8	-12	1	59	38	-3*	-5	109	44	1*	-4	112	14	-12	
-15	187	11	21	-14	292	14	-25	2	69	15	-5*	-4	45	26	42*	-3	35	37	26*
-14	81	13	5	-12	327	15	-24	3	65	29	-2*	-3	166	9	14	-2	56	16	-3*
-13	95	9	-2	-10	137	18	-10	4	0	49	-3*	-2	91	15	6	-1	77	13	-22
-12	38	39	2*	-8	277	32	-26	5	97	21	-30*	-1	34	38	16*				
-11	72	14	-5*	-6	48	23	1*	6	161	9	12	0	21	37	17*				
-10	62	34	5*	-4	135	9	-9	H,K=	13,	3	1	147	28	5*					
-9	237	24	9	-2	18	55	-23*-16	94	9	-1	H,K=	13,	6						
-8	161	10	16	0	48	38	-3*-15	101	9	10	-6	234	13	8					
-7	54	16	50*	2	74	16	-12*-14	158	10	7	-5	66	12	6*					
-6	140	11	-5	4	47	32	22*-13	18	39	-10*	H,K=	14,	0						
-5	94	11	4	6	124	56	-61*-12	147	8	14	-12	26	38	-8*					
-4	177	30	10	H,K=	13,	1	-11	94	10	6	-10	50	33	-24*					
-3	45	25	4*-17	57	15	-5*-10	107	11	-6	-8	121	8	3						
-2	283	60	10*-16	40	24	22*	-9	94	10	4	-6	187	11	-26					
-1	34	41	15*-15	65	15	-10*	-3	126	12	3	-4	0	42	-15*					
0	95	12	-13	-14	68	18	-7*	-7	72	12	21	-2	285	12	-7				
1	23	41	5*-13	0	57	-18*	-6	85	12	-3	0	32	42	-35*					
2	262	45	2	-12	107	13	15	-5	160	9	-12	2	167	43	-61*				
3	54	19	2*-11	90	19	-5*	-4	133	8	1	H,K=	14,	1						
4	32	52	19*-10	67	33	3*	-3	164	34	2*-13	49	17	19*						
5	71	10	-10	-3	106	9	-2	-2	103	14	-3	-12	243	23	-39				
6	127	19	-43	-8	215	14	-21	-1	65	20	-12*-11	75	16	-10*					
H,K=	12,	6	-7	60	16	14*	0	148	36	-14*-10	134	14	-17						
-14	82	10	-11	-6	37	48	-17*	1	209	73	-10*	-9	38	44	2*				
-13	41	20	28*	-5	55	31	-6*	2	92	14	-16	-8	140	9	-9				
-12	333	18	6	-4	237	38	-33	3	51	20	-13*	-7	34	40	-17*				
-11	24	36	15*	-3	85	13	-9	4	83	33	-38*	-6	154	9	-18				
-10	76	16	3*	-2	171	13	-8	5	79	46	-21*	-5	0	44	-41*				
-9	88	10	6	-1	27	45	23*	H,K=	13,	4	-4	41	55	-14*					